

Advanced Topics in Environmental & Resource Economics

Professor: Nathan W. Chan

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Class meetings: Tuesdays and Thursdays, 11:30-12:45pm (Stockbridge Hall 301)

Office Hours: Wednesdays, 11:30am-1:00pm or by appointment

Overview

This course will explore environmental and resource issues through the lens of empirical economics. The first section of the course will focus on statistical and econometric tools, with a particular emphasis on causal inference. This will provide a foundation for subsequent study, as we proceed to read and discuss scholarly work on environmental and natural resource economics. The articles will include a wide array of environmental applications including “green” behavior, energy and water use, air pollution, and transportation. Students will regularly read and respond to articles, and they will also craft and submit a detailed research proposal that applies the course material to a real-world empirical problem.

Learning Goals

- Understand causal inference.
- Become familiar with empirical analysis of environmental issues.
- Sharpen critical reasoning through reflection on assigned articles.
- Critically engage with cutting edge research in economics.
- Learn first-hand about the research process and research design.

Prerequisites

Students are expected to be proficient in microeconomic analysis, statistics, and calculus at the time of enrollment. Prior knowledge of hypothesis testing, regression modeling, marginal analysis, optimization, and differentiation is crucial for this course.

Readings:

The textbook for the course is

Mastering 'Metrics: The Path from Cause to Effect by Angrist and Pischke (ISBN: 0691152845)

Mastering 'Metrics (MM) will elucidate the general strategies and tools used by economists to answer causal questions. *****Bring this book with you to each class meeting.*****

In addition to this text, you will also be required to read assigned journal articles that apply the tools discussed in MM to environmental and resource economics questions. As you read journal articles, make sure that you understand the overall economic insights of the paper (big picture) as well as the empirical strategy for identifying causality (details). A full list of articles is at the end of this syllabus.

Evaluation

This is an advanced topics course that is primarily discussion-based. You should read the textbook chapters and journal articles closely and be prepared to discuss them in class. Much of your semester grade is based on classroom engagement. You will be evaluated based on voluntary participation in class discussions and cold-calling. You will also submit several reflective responses for each journal article that we read. In general, successful students will demonstrate curiosity, critical thinking, and an ability and willingness to reflect deeply on the assigned material.

Each student will also serve as discussion facilitator (alongside several peers) for **two** journal articles. Facilitators will provide a brief overview of the paper and lead the class discussion for that paper.

There will be a term project with several successive checkpoints. Students may work in groups for this project. Details of each portion will be forthcoming. There will also be periodic quizzes.

The overall breakdown for the final grade is:

- 50% Regular Tasks
 - 15% Engagement and contributions to class discussions
 - 15% Written responses to journal articles
 - 10% Discussion facilitator task (for two separate articles)
 - 10% Quizzes
- 50% Term Project
 - 10% Idea Proposals assignment (Individual)
 - 10% Data Summary assignment (Group)
 - 10% Presentation (Group)
 - 20% Final Paper (Group)

Deadlines and late submissions

Written responses to journal articles: **These will due by 9:00pm, sharp, on the day before class in which the journal article is to be discussed.** Late responses that are submitted by 9:00am on the day of the discussion will receive half credit; after that, the student will receive a grade of zero.

Research paper assignments: The due dates for each assignment are given in the calendar below. Unless otherwise specified, these should be submitted by 5:00pm on the specified date. You may submit the assignment until 9:00pm that day without penalty, but submissions after that time will be deemed late.

A late submission will be penalized 25% if submitted by 5:00pm on the following day. Late submissions received between 24 and 48 hours after the deadline will be penalized 50%. Assignments that are submitted more than 48 hours after the deadline will receive a grade of zero.

Expectations

Instructor expectations: As your instructor, I am committed to: 1) being organized, 2) managing classroom time effectively, 3) communicating clearly, 4) and being responsive to students. I seek to create a collaborative learning environment where you not only learn from me, but also from your classmates through group work and class discussions.

I will respond to e-mails received Monday through Thursday within 24 hours; inquiries received on Friday and Saturday will be addressed by Monday night.

I will contact you about course material, readings, assignments, etc. via e-mail, Moodle, and/or in-class announcements. You are responsible for announcements made through all of these channels.

Student expectations: Students in this course commit to: 1) being punctual, attentive, and engaged in every class, 2) completing assignments by posted deadlines, 3) contributing to class discussions, and 4) respecting and collaborating with fellow classmates.

Be punctual to class; this will ensure that we can complete each class in the allotted time. Please do not leave the room during class, as this can be disruptive to your instructor and fellow classmates. Laptops

and tablets will be allowed in the classroom for academic purposes related to this course; **all other uses of electronic devices are prohibited.**

Personal wellness

In light of the policies above, I want to emphasize that your physical and mental health are important to me. Family emergencies, physical or mental illness, personal crises, or childcare issues can significantly affect your academic performance. If you encounter any issues that severely affect your ability to engage in this course, please contact me so that we can work out a fair resolution. You do not need to tell me all the details of your situation, and you may also speak with someone from student services who can help me determine adequate accommodations without revealing sensitive information to me.

Integrative Experience

This course will satisfy the Integrative Experience requirement for Resource Economics majors when taken with ResEcon 394LI and ResEcon 471.

The Integrative Experience (IE) requirement at UMass Amherst addresses the challenges associated with educational fragmentation. Positioned in the upper-division, the IE provides students with a structured opportunity to look back on their early college learning experiences, reflect upon and make connections between those earlier experiences and the more advanced work in their major, and use their integrated learning to prepare for the demands of the world beyond the University.

In line with these goals, this course will require students to synthesize information from disparate sources and apply a wide variety of analytical tools to understand environmental and natural resource challenges.

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/).

Schedule and Due Dates

The following table gives the topics for each class meeting and the readings assigned for that class. Readings are indicated in **bold** and should be completed **prior** to the class for which they are assigned. Journal articles will be made available via Moodle.

Readings with asterisks (*) can be selected for the Discussion Facilitator task.

Please be sure to bring a copy of the reading to class.

Week	Date	Topics and Readings	Notes
1	9/3 9/5	Course overview Causality and Identification activity Causality and Identification (cont'd) (MM Intro) Foundations	Quiz 1
2	9/10 9/12	Randomized Trials (MM Chapter 1) Regressions (MM Chapter 2)	
3	9/17 9/19	Allcott (2011) (skip section 4) Delmas and Lessem (2014)	Review list of readings, identify ones that you might facilitate
4	9/24 9/26	* Kotchen and Moon (2012) * Conte and Kotchen (2010)	Quiz 2
5	10/1 10/3	* Mullins (2018) * Graff Zivin and Neidell (2009) + self assessment	
6	10/8 10/10	<i>Proposal workshop</i> Instrumental Variables (MM Chapter 3)	
7	10/15 10/17	[No Class - Holiday Observance] * Moretti and Neidell (2011)	Quiz 3 Idea Proposals due 10/18
8	10/22 10/24	Regression Discontinuity (MM Chapter 4) * Cutter and Neidell (2009)	
9	10/29 10/31	Difference-in-Difference (MM Chapter 5) * Jacobsen (2011)	Quiz 4; Team Contract due 10/31
10	11/5 11/7	* Kotchen and Grant (2011) + self assessment [No Class – Conference Travel]	
11	11/12 11/14	<i>Data Workshop</i> * Costa and Kahn (2013)	Quiz 5 Data Summary due 11/15
	11/19 11/21	Thanksgiving Recess Thanksgiving Recess	
12	11/26 11/28	* Walls et al. (2017) Group Work	
13	12/3 12/5	TBD Semester Review	
14	12/10	Final Presentations	Final paper due 12/14