Georgetown University

Environmental Economics
Economics 4075
Fall 2023 – Syllabus
Monday and Wednesday
5:00pm - 6:15pm in White-Gravenor 206

INSTRUCTOR INFO

Professor: Wes Austin, PhD
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Professor: Adam Theising, PhD
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COURSE DESCRIPTION

This course will cover advanced theory and applications underlying environmental economics and examples from real-world scenarios. The foundations of microeconomic theory lie in the decisions of consumers and producers, but these decisions are often made under incomplete information or incomplete markets. We will first build an understanding of how markets fail, then continue with methods frequently used to measure these failures, and then we conclude with policy tools that are designed to correct the markets. The course relies on published literature for case studies and replication of approaches (done in the R programming language). The goal of this course is to establish a good understanding of environmental-economic issues and start to build a tool kit such that you will leave with the ability to contribute to discussions related to environmental policy by using economic theory and empirical methods.

LEARNING OBJECTIVES

LO 1. Explain the theoretical foundation of environmental economics.
LO 2. Identify several methods used to measure environmental benefits.
LO 3. Propose a method that could be used to correct a specific market failure.
LO 4. Describe the history of environmental policy and its outcomes.
LO 5. Assess the efficiency and unintended consequences of an environmental policy.

CONTACTING US

We will make class announcements and provide additional information to students through email (using your university email address). You can expect that we will respond to your emails within 48 hours. Office hours will be conducted virtually and must be arranged via email ahead of time.

COURSE MATERIALS

Textbook: Markets and the Environment; Keohane and Olmstead (K&O)
eTextbook: $28.99 ; *Paperback (used)* <$10 – Amazon link here

We have carefully chosen a book that we believe does an excellent job of covering the underlying theory that will be discussed in this course at the best price we could find. This is the only required purchase for this course! The book will serve as a critical foundation for the topics we will cover, and it will not be possible to complete the course without it (or without reading it!). Other GU instructors have also used this book, so reach out to other students if needed, either edition (first/second) will work great! Please have the book available by the second week of classes.

The rest of the material will be distributed through the course website (https://github.com/adamtheising/environmental_economics). Things that will be posted include, but are not limited to, additional readings, videos, podcasts, homework assignments. Grades will be posted to Canvas.

Recommended books for the interested reader. Not required and will not be used *directly* in the course, but the topics will be discussed. This is a list of books that we (your instructors) enjoyed reading and believe serve as great complements and extensions to the material we do cover. Read throughout the semester, or after:

1. The Spirit of Green: The Economics of Collisions and Contagions in a Crowded World, by Bill Nordhaus (Nobel Prize in Economics, 2018)
2. Small Is Beautiful: Economics as if People Mattered, by Ed Schumacher
3. Governing the Commons, by Elinor Ostrom (Nobel Prize in Economics 2009)
4. Toxic Communities, by Dorceta Taylor

GRADES

Grading will be based on three parts of the course:

1) Reflection Posts and Case Studies 30%
2) Midterm 35%
3) Final Exam 35%

Letter grades are as follows and are rounded to the nearest integer (i.e., 0.495 becomes 1):

A (90-100), A- (87-89),

B+ (84-86), B (80-83), B- (77-79),

C+ (74-76), C (70-73), C- (67-69),

D+ (64-66), D (61-63), D- (55-60),

F (0-55) – don't do this

ACCOMMODATIONS

Any student who feels that they may require an accommodation in this course, based on the impact of a disability, should contact us as soon as possible to arrange for a meeting to coordinate all accommodations. Any student who wishes to seek accommodation should also be sure to directly contact Disability Support Services (DSS) for more information (*https://academicsupport.georgetown.edu/disability*).

COURSE CALENDAR

Readings and Videos: These are to be completed *before* class on the day they are listed. For example, K&O Ch. 2-3 should be read before coming to class on August 28th.
Homework: Most homework assignments are due by Sunday at 11:59pm the week after they are listed.
Exams: There will be a midterm on **Wednesday, October 18th.** There will be a final exam on **Monday, December 4th.** Please mark these dates in your calendar; the exams will be in-person during class time.
Comment: We may update course materials or schedule, as needed.

Week	Date	Topic	Readings/Videos	Exams/ Homework
Module 1: Market Failure and the Need for Environmental Regulation				
1	Aug 23	Introductions and Overview of Course		Buy Textbook K & O: Ch. 1
2	Aug 28 (AT)	A brief recap of econ theory → When and Why Do Markets Fail?	K & O: Ch. 2-3 Hausman Video	
2	Aug 30 (AT)	Market Failures: Examples and in Practice	K & O: Ch. 4-5	Ref. Post #1 on Podcast #1 or Podcast #2 **(Due Sep 10)**
Module 2: Measuring Environmental Benefits				
3	**Sep 5* (Tues)** (AT)	Econometrics, Treatment Effects, and their place in Environmental Economics	First 10 min of Olmstead Video	
3	Sep 6 (AT)	Using Distance to Infer the Value of Open Space, Public Lands and their Amenities (Travel Cost)	Hanauer and Reid (2017) and *(optional)*: Gellman, Walls & Wibbenmeyer (2023)	Case Study #1 Travel Cost or Hedonics **(Due Sep 17)**
4	Sep 11 (AT)	Voting with Your Feet – and Why it Doesn't Always Work (Hedonics)	Muehlenbachs, Spiller & Timmins and (2015) and *(optional)* Christensen and Timmins (2022)	
4	Sep 13 (AT)	Inference from Other Revealed Preferences: Using Expenditures and Wages to Estimate Environmental Benefits (Defensive Behavior + VSL)	Wrenn, Klaiber & Jaenicke (2016) and *(optional)* Shogren and Stamland (2005)	
5	Sep 18 (AT)	Constructing Hypothetical Markets when They Don't Exist (Stated Preferences)	Parthum and Ando (2020) and *(optional)*: Dussaux et al. (2023)	
5	Sep 20 (AT)	How Can We Estimate the Total Damages from Climate Change?	Harari Video Auffhammer Video and Nordhaus (2017)	Case Study #2 DICE 2016 **(Due Oct 1)**
6	Sep 25 (AT)	Incorporating the Environment into Economic Accounts (Natural Capital)	K & O: Ch. 11 Fenichel podcast and *(optional)*: Solow Monograph	
Module 3: Environmental Regulatory Impact Analysis				
6	Sep 27 (WA)	Positive vs. Normative methods and their role in Environmental Economics	McGartland (2021) Cook (2022)	
7	Oct 2 (WA)	The Other Side of the Ledger: Benefit-Cost Analysis	Arrow et al. (1996) and Fraas et al. (2023) and (*optional*) Flyvberg and Bester (2021)	
7	Oct 4 (WA)	Environmental Justice History	Banzhaf et al. (2019) and (*optional*) Qiang et al (2021)	Case Study #3 - Bivariate Mapping **(Due Oct 29)**
8	*Oct 9*	*Mid-semester Holiday – No Class*		
8	Oct 11 (WA)	Environmental Justice Analysis	Andarge et al. (2023) and (*optional*) EJ Technical Guidance Ch. 2-4	

9	Oct 16 (AT)	Review of Modules 1, 2, and 3	Study Review Material	Study!
9	**Oct 18**	**Midterm Covering Material from Modules 1, 2, and 3**		**Midterm Exam**
Module 4: Economics and Environmental Policy				
10	Oct 23 (WA)	Environmental Regulation, Economics, and Policy Design	K & O: Ch. 8 - 9 and (*optional*) Keohane et al. (1998)	
10	Oct 25 (WA)	Market-based Instruments in Practice	K & O: Ch. 10 Carbon Trading Podcast and (*optional*) Hernandez-Cortes and Meng (2023)	Ref. Post #2 **(Due Nov 8)**
11	Oct 30 (WA)	Clean Air Act	Hernandez-Cortes et al. (2022) (*optional*) Chay and Greenstone (2005)	
11	Nov 1 (WA)	Regulating Cars	Killeen and Levinson (2017) Transportation Justice Podcast	
12	Nov 6 (WA)	Clean Water Act	Keiser and Shapiro (2019) (optional) Keiser, Kling, and Shapiro (2018)	
12	Nov 8 (WA)	Safe Drinking Water Act	Allaire et al. (2018) Fedinick et al. (2022) and (*optional*) Keiser et al. (2023)	Case Study #4 – PFAS NPDWR **(Due Nov 27)**
13	Nov 13 (AT)	Toxic Chemicals – Liability, TSCA & the Lautenberg Amendments	Shapira and Zingales (2023) and *(optional)* Shavell (1984)	
13	Nov 15 (WA)	Hazardous Wastes – CERCLA and RCRA	Hazardous Chemical Waste Video	
Module 5: International Environmental Economics and Policy Frontiers				
14	Nov 20 (AT)	International Environmental Economics	Levinson (2023) and *(optional)* Bellelli et al. (2023)	
14	*Nov 22*	*Fall Recess – No Class*		
15	Nov 27 (WA)	What's Next? Inflation Reduction Act, Bipartisan Infrastructure Law, and WV vs. EPA	K & O: Ch. 12 WV vs. EPA Video IRA Video	
15	Nov 29 (WA)	Review of Modules 4 & 5	Study Review Material	Study!
16	Dec 4	**In-class Final Exam Covering Material from Modules 4 & 5**		**Final Exam**
16+	Dec 16	Have a great winter break!		