

ECON 310 – Environmental and Resource Economics

Spring 2021

Instructor: Dr. Jun He

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Meeting times

- Class time: TR 2.50-4.10 pm SCIE201 (via [zoom](#) for the first week, password: 000000, teaching mode for the remainder of the semester pending university notification)
- Office hours: 10:30-11:30 am Tuesday and 4.30-6 pm Friday via zoom (a different [zoom](#) link from the class zoom, meeting ID: 994 7940 7747). Booking an opening through [calendly](#) before coming to the meeting is required.
- Zoom links are at the top of Moodle.

Course Description

This course examines the economic drivers of environmental problems and policies to combat environmental degradation. Topics include failures of the free market, the monetary value of ecosystems, resource utilization, and the unintended consequences of environmental policies. Applications will be gleaned from a vast array of real-world issues, such as natural resources (air, water, land, etc), pollution control, biodiversity, ecosystem services, and other global environmental change topics.

Prerequisites

Econ 301- Microeconomic Analysis;
Econ 300 and Econ 385 are preferred.

Course objectives

Successful students will learn how to:

1. Analyze environmental issues through an economics lens.
2. Read and interpret scholarly papers in environmental economics.
3. Discover academically interesting research topics.
4. Conduct primary research that contributes to our understanding of the world.
5. Develop scientific rigor from hands-on training through the term project

Course Format

I am using a “flipped classroom” approach for this class. This means you will read/watch materials asynchronously before class, then we will meet synchronously to engage more deeply with the material together. Class time may be shortened to account for the asynchronous material to avoid creating any extra time burden.

The workflow for each lecture will look like the following. More details follow in the “Assignments section” on Moodle.

You must be present to participate and receive the information and to engage in the discussion.

How we're dealing with the pandemic

If you are sick, don't come to class; do get medical help!

The rest of the time let's be patient and communicative with each other. Please let me know if you face difficult circumstances, and I will work with you to find solutions. You are never required to share personal information about your mental or physical health, so don't feel obligated to give details beyond what is comfortable for you.

When coming back to an in-person class, please strictly comply with the mask rule for the health and safety of your own and your classmates.

Textbook

Environmental Economics and Policy (7th ed.) by Lynne Lewis and Tom Tietenberg.

Optional:

Environmental & Natural Resources Economics (7th ed) by Tom Tietenberg and Lynne Lewis

Assignments (100' in total)

1. Paper, comprising the following parts:
 - List of ideas 3'
 - Proposal and sources 7'
 - Literature review 10'
 - Table of means 5'
 - Regression table 5'
 - Final paper – full draft
 - Presentation 10'
 - Final paper – revised draft 15'
2. Peer feedback, comprising:
 - Literature review comments 2.5'*2
 - Referee reports on drafts *2: 5'*2
3. Empirical exercises *3 (5'*3)
4. Reading and discussion, comprising:
 - Perusal reading 10'
 - Participation in discussions & attn 10'
 - Group Presentation 5'

Paper

Most of your work in this class will be to create an original research paper. More detailed instructions will be provided later. In brief, you will choose a topic of interest to you that is related to the subject of the class. Your paper should contribute to the literature (meaning, it adds to our understanding of the world). I will expect an empirical paper.

The library has provided asynchronous videos for how to conduct library research, which I will provide on Moodle.

Peer feedback

Each student will be required to provide peer feedback on two other students' papers. As the reviewer, *you should treat this work as confidential*. Do not share the paper or your comments on it with anyone other than me and the author.

Empirical exercises

We will have one in-class exercise where you replicate the results from a scholarly paper. We will have another 2 empirical problem sets to answer.

Reading and discussion

This is a seminar-style class, not a lecture. For this to work, everyone needs to participate actively. You will need to read and mark up the assigned paper at least 24 hours before class. These comments, questions, ideas, etc. will be the basis for discussion in class the next day. You will also need to be present during class time and prepared to discuss the paper. **I will not provide feedback on any assignment turned in more than 24 hours late, without prior written approval.** (I may not approve)

In some cases, I will provide short lecture recordings to help you understand what you are reading. I will provide these one week before class on Moodle. You should watch these before reading the paper.

I have reserved two class times for “student choice” reading. I will assign students to select and present on these topics based on a lottery during the second week of classes. The selected students (2 pairs) will be responsible for 1) identifying an environmental topic not covered earlier in the class, 2) locating a scholarly paper on this topic, and 3) presenting the motivation for that paper. I will help you work through these steps.

Presentations

Each student will present two times during the semester. The first presentation will be with a partner on one environmental issue during the semester. This presentation should provide evidence about why that day’s assigned paper is important (i.e. “why should we spend our valuable time on this topic?”). You may find supporting information from the paper's introduction, the book chapter, and/or online research.

The second presentation will be on the results of your research project. These will occur on the last three days of class. I will provide a survey on Moodle for you to express your preferences for each presentation.

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Resources

CA: You can reach Mackenzie Sheehan by emailing msheehan@wesleyan.edu. Her office hour is 8:00-9:00 pm Thursday on Zoom <https://wesleyan.zoom.us/j/6538789356> (meeting ID: 653 878 9356).

Students may also find the resources of the writing center (www.wesleyan.edu/writing), library (<https://www.wesleyan.edu/libr/research/index.html>), and QAC(<https://www.wesleyan.edu/qac/>) useful.

Important dates

1/27: class begin in the online format

2/9: Last day to drop the class

4/27: Last day to withdraw

2/1: in-person class begins

3/12-20: spring break

5/4: class ends

Course Outline

Wk1. Economics and Environment	
D1. Introduction <ul style="list-style-type: none"> • L&T Chapter 1 • Fullerton and Stavins, 1998 	D2. Economic Approach: property rights, externalities, public goods <ul style="list-style-type: none"> • L&T Chapter 2 • Handout • Ostrom, 2000.
Wk2. Evaluation and Decision-making	
Evaluating Trade-offs and decision making D3. Policy Choice <ul style="list-style-type: none"> • L&T Chapter 3 • Hahn, 2000. --- Course goals	D4. Cost-benefit analysis <ul style="list-style-type: none"> • L&T Chapter 4 • Arrow, et al., 1996. • Bellas and Kosnik, 2019. --- presentation preferences
Wk3. Valuing the environment	
D5. Revealed preferences <ul style="list-style-type: none"> • L&T Chapter 5 --- Idealist	D6. Stated preferences (Oil spills) <ul style="list-style-type: none"> • Carson et al., 2003.
W4. Computer program	
D7. Computer Lab, replication exercise --- Empirical exercise 1	D8. Idea Lab: a wildlife case study (Wildfire)
W5. Fish, wildlife, and ecosystem services	
D9. Ecosystem services (African megafauna declines) <ul style="list-style-type: none"> • L&T Chapter 6 • Frost and Bond, 2008 --- Project proposal	D10. Fisheries management: catch shares (Over-fishing) <ul style="list-style-type: none"> • L&T Chapter 7 • Costello et al., 2008 • Costello et al., 2008
W6. Climate Change	
D11. Climate change: Mitigation <ul style="list-style-type: none"> • L&T Chapter 10 • Schmalensee and Stavins. 2017. • Sandel. n.d. --- Annotated bibliography	D12. Climate change: Adaptation (Sea level rise and flooding) <ul style="list-style-type: none"> • L&T Chapter 11 • Gibson and Mullins, 2020.

W7. Pollution	
D13. Water: stock pollutants (Mercury pollution) • L&T Chapter 13 • Shimshack et al., 2007. --- Mid-semester self-assessment --- Intro and Lit Review	D14. Water: emerging threats (Plastic pollution) • Taylor, 2019.
W8. Environmental Justice	
D15. Overview • L&T Chapter 14 • Banzhaf et al. 2019 --- Peer comments on lit review --- Table of Means	D16. Differential exposure (Waste export) • Brooks and Sethi, 1997 • Wen et al, 2021. --- Writing Center video
W9-10. Advance Empirical method of panel data	
W9. Random Effect and Fixed Effect --- empirical exercise 2 --- Writing Center Appointment	W10. D14. Diff-in-Diff and Event-History --- empirical exercise 3 --- regression table, draft
W11. Economic writing (if time allows)	
<p>Organization, and presentation of empirical results</p> <p>Justification of findings with Robustness check</p> <p>Internal and External validities</p> <p>--- regression table-final</p>	
W12. Student Choice I & II --- Final paper, draft	
W13-14. Presentation --- Final paper revised (May 10) --- Final assessment (May 11)	

The outline is tentative and subject to change.¹

Course Statements

Students with Disabilities

Wesleyan University is committed to ensuring that all qualified students with disabilities are afforded an equal opportunity to participate in, and benefit from, its programs and services. To receive accommodations, a student must have a disability as defined by the ADA. Since accommodations may require early planning and generally are not provided retroactively, please contact Accessibility Services as soon as possible.

If you have a disability or think that you might have a disability, please contact Accessibility Services in order to arrange an appointment to discuss your needs and the process for requesting accommodations. Accessibility Services is located in North College, rooms 021, or can be reached by email (accessibility@wesleyan.edu) or

¹ “()” means topic of in-class presentation. “---” means assignment.

phone (860-685-2332).

Religious Observances

If you anticipate that your religious/spiritual observance may conflict with academic obligations such as attending class, taking examinations, or submitting assignments, you can work directly with me to make reasonable arrangements. Should you require additional support or guidance, please feel free to reach out to Rabbi David Teva, Director of the Office of Religious and Spiritual Life at dleipziger@wesleyan.edu or any of the chaplains in the Office of Religious and Spiritual Life at <https://www.wesleyan.edu/orsl/index.html>.

Title IX Resources

If past trauma inhibits your ability to fully participate in class, please contact Debbie Colucci, Deputy Title IX Coordinator, at dcolucci@wesleyan.edu, or your class dean. Additionally, and if you are comfortable, you can work directly with me to make reasonable arrangements.

Discrimination and Harassment

Wesleyan University is committed to maintaining a positive learning, working, and living environment. Wesleyan will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this Wesleyan policy, “Protected Classes” refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy. Individuals who believe they have been discriminated against should contact the Office for Equity and Inclusion at 860-685-4771.

Honor Code

All students of Wesleyan University are responsible for knowing and adhering to the Honor Code of this institution (see the Student Handbook for details). I will not tolerate violations of the Honor Code (e.g., cheating, plagiarism, or aiding in academic dishonesty) and will report any incidents of misconduct to the Honor Code Council. Students in violation of the policy are subject to academic sanctions from the faculty member and non-academic sanctions up to and including expulsion.

(By the way, several sections of this syllabus are text used wholesale or nearly so with permission by the authors. The text for course statements was provided by offices within the University with encouragement that it be used verbatim in syllabi; therefore, I do not need to cite it.)

#	Day	Date	Topic	Student presentation	Reading	Paper type
Wk1. Economics and Environment						
1	Thu	27-Jan	Introduction		<ul style="list-style-type: none"> • L&T Chapter 1 • Fullerton and Stavins, 1998 	
2	Tue	1-Feb	Economic Approach: property rights, externalities, public goods		<ul style="list-style-type: none"> • L&T Chapter 2 • Handout • Ostrom, 2000 	
Wk2. Evaluation and Decision-making						
3	Thu	3-Feb	Policy Choice		<ul style="list-style-type: none"> • L&T Chapter 3 • Hahn, 2000 	
4	Tue	8-Feb	Cost-Benefit analysis		<ul style="list-style-type: none"> • L&T Chapter 4 • Arrow, et al., 1996 • Bellas and Kosnik, 2019 	
Wk3. Valuing the Environment						
5	Thu	10-Feb	Revealed preferences		<ul style="list-style-type: none"> • L&T Chapter 5 	
6	Thu	15-Feb	Stated preferences	<p>Oil spills:</p> <ul style="list-style-type: none"> • How common are oil spills globally? In the USA? • How has this changed over time (see L&T Figure 13.1) • What industries or shipment types are most responsible? • Do they mostly happen on land or at sea? <p>Background on the Exxon Valdez oil spill? (when/how/where did it happen; how bad was it; has the ecosystem recovered?)</p>	<ul style="list-style-type: none"> • Carson et al., 2003 	
Wk4. Computer program						
7	Thu	17-Feb	Computer Lab, replication exercise		n/a	
8	Tue	24-Feb	Idea Lab: a wildfire case study	<p>Wildfire:</p> <ul style="list-style-type: none"> • Frequency of wildfires in the USA • Trends over time • Notable examples (e.g. CA 2019-2020) • Causes of wildfires <p>Economic costs of wildfires (e.g. losses, firefighting, etc.)</p>	n/a	

Wk5. Fish, wildlife, and ecosystem services						
9	Thu	24-Feb	Ecosystem services	<p>African megafauna declines:</p> <ul style="list-style-type: none"> • How have populations of charismatic megafauna (i.e. big, beautiful animals) changed over time? • What has happened with elephants and rhinos specifically? • What are the major pressures on these populations? • What are some strategies governments use to mitigate these pressures? • What international laws apply? (mainly CITES) 	<ul style="list-style-type: none"> • L&T Chapter 6 • Frost, Peter G.H., and Ivan Bond. 2008. "The CAMPFIRE Programme in Zimbabwe: Payments for Wildlife Services." <i>Ecological Economics</i> 65 (4): 776–87. https://doi.org/10.1016/j.ecolecon.2007.09.018. (See L&T Example 6.5) 	Empirical paper - descriptive stats
10	Tue	1-Mar	Fisheries management: catch shares & ITQs	<p>Over-fishing:</p> <ul style="list-style-type: none"> • Trends in global fish catch? • Major countries and species caught? • Case study for a major collapse - suggested: Atlantic Northwest Cod • What are catch shares & ITQs? • How many countries are now using these strategies? (see L&T Table 7.1) 	<ul style="list-style-type: none"> • L&T Chapter 7 • Costello, C., S. D. Gaines, and J. Lynham. 2008. "Can Catch Shares Prevent Fisheries Collapse?" <i>Science</i> 321 (5896): 1678–81. https://doi.org/10.1126/science.1159478. • Costello, C., S. D. Gaines, and J. Lynham. 2008. "Supplementary Material for: Can Catch Shares Prevent Fisheries Collapse?" <i>Science</i> 321 (5896): 1678–81. https://doi.org/10.1126/science.1159478. 	Issue paper; motivated by OLS
Wk6. Climate Change						
11	Thu	3-Mar	Climate Change: Mitigation		<ul style="list-style-type: none"> • L&T Chapter 10 • Schmalensee and Stavins. 2017 • Sandel. n.d 	Empirical paper - IV
12	Tue	8-Mar	Climate change: Adaptation	<p>Sea level rise and flooding:</p> <ul style="list-style-type: none"> • How much will sea levels rise due to climate change under current GHG emissions? • Why does sea level rise cause more flooding? (storm surges) • How bad would this be for major cities? • How many people would be affected? • Is there anything we can do to adapt? <p>Key source: NOAA https://oceanservice.noaa.gov/facts/sealevel.html https://coast.noaa.gov/slr/</p>	<ul style="list-style-type: none"> • L&T Chapter 11 • Gibson, Matthew, and Jamie T. Mullins. 2020. "Climate Risk and Beliefs in New York Floodplains." <i>Journal of the Association of Environmental and Resource Economists</i> 7 (6): 1069–1111. https://doi.org/10.1086/710240. 	Empirical paper - DiD
Wk7. Pollution						
13	Thu	10-Mar	Water: stock pollutants	<p>Mercury pollution:</p> <ul style="list-style-type: none"> • What percent of US surface waters are fishable, swimmable, or boatable? • What are the main sources of water pollution (industries and pollution types)? • How prevalent is mercury pollution specifically? • Where does mercury pollution come from? • How does mercury pollution affect humans? • Why is it so hard to get rid of mercury pollution? 	<ul style="list-style-type: none"> • L&T Chapter 13 • Shimshack, Jay P., Michael B. Ward, and Timothy K. M. Beatty. 2007. "Mercury Advisories: Information, Education, and Fish Consumption." <i>Journal of Environmental Economics and Management</i> 53 (2): 158–79. https://doi.org/10.1016/j.jeem.2006.10.002. (See L&T Debate 13.1) 	Empirical paper - DiD, QTE
14	Tue	22-Mar	Water: emerging threats	<p>Plastic pollution:</p> <ul style="list-style-type: none"> • How much plastic pollution is in the ocean? • Where does it come from and go to (geographically)? • What are the main culprits (main plastic products)? • Of these products, how important are plastic bags? • Who is using plastic bag bans? What do they do? 	<ul style="list-style-type: none"> • Taylor, Rebecca L.C. 2019. "Bag Leakage: The Effect of Disposable Carryout Bag Regulations on Unregulated Bags." <i>Journal of Environmental Economics and Management</i> 93 (January): 254–71. https://doi.org/10.1016/j.jeem.2019.01.001. (See L&T Debate 13.2) 	Empirical paper - Event study

Wk8. Environmental justice: race, place, and environmental hazards

15	Thu	14-Mar	Overview		<ul style="list-style-type: none"> • L&T Chapter 14 • Banzhaf et al. 2019 	
16	Tue	29-Mar	Differential Exposure	Waste Export:	<ul style="list-style-type: none"> • Brooks and Sethi, 1997 • Wen et al, 2021 	

Wk9-10. Advance Empirical method of panel data

17 - 18	Thu- Tues	31-Mar 5-Apr	Random Effect and Fixed Effect		n/a	
19 - 20	Thu- Tue	7-Apr 12-Apr	Diff-in-Diff & Event-History		n/a	

Wk11. Economics Writing (if time allows)

21 - 22	Thu- Tue	14-Apr 19-Apr	Organization and presentation of empirical results Justification of findings with Robustness check Internal and External Validities		n/a	
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Wk12. Student Choice (e.g. climate justice, invasive species, biodiversity/species extinction, deforestation, water quantity/droughts, soil degradation, agriculture, food waste, light pollution...)

23	Thu	21-Apr	Student Choice 1			
24	Tue	26-Apr	Student Choice 2			

Wk13-14. Final Presentations

24	Tue	28-Apr				
24	Tue	3-May				