

Environmental Economics (Spring 2025)

Economics 4318/7318

2:00pm - 3:15pm (M/W)
TATE HALL 101

INSTRUCTOR INFO

Instructor: Seunghoon Lee
Office: Locust Street Building (615 Locust Street) E219
Email: seunghoon.lee@missouri.edu
Office Hours: By appointment
Prerequisites: ECON 4351 (or ECON 3251)

COURSE DESCRIPTION

This course provides an introduction to the field of environmental economics. It is designed to give students an overview of how economic principles can be applied to design and evaluate environmental policies. Topic areas and applications include:

- Market failure (e.g., climate change) and its remedies
- Evaluation of environmental policies
- Measurement of benefits and costs of environmental conditions and policies
- Frontiers of environmental economics: climate change, environmental justice, IRA, etc

LEARNING OBJECTIVES

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

COURSE MATERIALS

Textbook: Markets and the Environment (2nd edition); Keohane and Olmstead (K&O)
eTextbook: \$28.99 ; *Paperback (used)* \$6.28 – [Amazon link here](#)

I have carefully chosen a book that I believe does an excellent job of covering the underlying theory that will be discussed in this course at the best price I could find. Either edition (first/second) should work. The lectures will cover some material beyond the material covered in the textbook. Note that this additional material is required for the exams.

1. Homework (5 points): four homeworks will be assigned throughout the semester, and each homework will account for 1 point. Importantly, you can receive full credit as long as you do the work (you should show it) and submit it on time. Plus, if you successfully get full credit for all four homeworks, you'll automatically earn 1 extra point. Although ungraded, it is important to take these homeworks seriously because they should serve as your primary study guide for the two midterm exams. I will go over and solve the homework problems in class right after each deadline. Homework should be submitted electronically through Canvas by the deadline specified in the "Preliminary Lecture Plan" section (photos of hand-written homework are fine as long as it's legible).
2. Exams (40 points): there will be two midterm exams throughout the semester. Each exam will be 20 points in total. No make-up exam will be offered; however, for excused absences due to medical emergencies, death in the family, and the like, an alternative assignment may be provided. Students missing both exams for any reason will receive a grade of Incomplete.
3. Term Paper (50 points): The primary writing assignment for this course is a term paper. You can find a list of potential topics on pages 8-9. You can work on your own topic, but past experience suggests that such a project is less likely to be successful unless you have a really clear idea on what you want to work on. If you wish to work on a topic not listed there, you must seek approval from the instructor by the end of Week 3 (Feb 7). Please ensure that all written submissions are formatted with double-spacing, 12-point font, and 1-inch margins. Submit your written assignments electronically via Canvas.

When working on the paper, you can think of yourself as a policy analyst or consultant for the government. Your goal is to write a memo to inform policymakers on your chosen topic. To achieve a high grade, your paper should be well-written, devoid of spelling and grammatical errors, and exhibit clarity, conciseness, and logical coherence. To this end, **before submitting your written assignments for grading, it is essential to read them aloud and revise them for conciseness and readability.** Additionally, all paper assignments should showcase the application of class materials and demonstrate objective and critical analysis.

Importantly, you are required to get help from the Writing Center

(<https://writingcenter.missouri.edu>) **before submitting your proposal.** I strongly recommend you bring an early version of the proposal and get feedback from a tutor there. You are more than welcome to utilize the Center more than once throughout the semester, but you must visit there at least once to discuss your proposal.

All sources must be properly acknowledged with in-text citations, footnotes and/or references (using any consistent and commonly accepted style). Citations must be complete enough to be checked easily (e.g., use page numbers for quotations; cite web addresses for internet sources). You may not treat Wikipedia, blogs, generative AI tools or tweets as reliable and informative sources. Indeed, using generative AI tools (e.g. ChatGPT) is not allowed per CRR 200.010 C.1.c. **Please be aware that citations will be subject to random checks, and any failure to adequately acknowledge sources will result in penalties.** When referencing other works in the text, do so with the author(s) last name and year of the paper/book. For example, *Ito (2014) shows that consumers respond to average, rather than marginal prices.* Be sure that all cited works are listed in your bibliography. Direct quotes must be

identified with quotation marks in the text (for short quotes) or offset from the text in a single-spaced block with additional ½ inch margins (for longer quotes).

Your paper should be formal and scientific, and as such unsupported opinions should not be included. That is, if your research leads you to believe that higher electricity tariffs do not necessarily reduce consumption, do not write "I think higher electricity tariff does not reduce consumption." Instead, write "Evidence from Author (year) indicates that higher electricity tariff does not reduce consumption."

NOTE 1: Papers with multiple errors or significant writing issues will not receive a grade. Students who fail to submit a satisfactory paper by the due date will be assigned an "Incomplete" grade. Getting help from the Writing Center will help you a lot in this regard.

NOTE 2: If you plan to write a paper on a topic that you have previously used for another class or are currently writing for another course, please talk to me before starting. In general, it is discouraged. Writing a paper on the same topic for two courses simultaneously or reusing an old paper without proper arrangements will be considered academic dishonesty.

There will be three graded portions of the term paper.

- a. **Paper Proposal (10 points):** Your proposal should be 2 pages long, and it should also have a separate list of references. Ensure that your paper utilizes a minimum of two references (feel free to take them from the list on pages 8-9 of the syllabus if you're choosing a topic from the list). You can add more references after the paper proposal submission. The primary purpose of the proposal is to provide motivation for your chosen topic. That is, **why it is an interesting and important question to write an essay about**. A well-crafted proposal should seamlessly integrate into your paper's introduction, setting the tone for the rest of the paper. Please submit both the proposal and Writing Center visit confirmation by **Sep 22** through Canvas. Note, you can do either in-person or virtual sessions. It is required to consult your proposal with a Writing Center tutor, and **a failure to submit the visit confirmation will cost 2 points (points deducted)**.
- b. **First Draft (20 points):** Your term paper should be at least 8 pages long and no more than 10 pages long. A concise presentation will be an important part of your grade (i.e., don't ramble or "waste" sentences). **You are required to use section headings**.
- c. **Final Draft (20 points):** The instructor will give feedback on the first draft. How those points have been addressed will be an important part of your grade. **In this regard, you are required to submit a response letter using the format provided on Canvas**. This letter should do two things: (1) summarize key comments and (2) summarize how you have addressed those points. Again, your final draft should be between 8 and 10 pages. **A failure to use the provided format will cost 2 points. If you don't submit the response letter at all, you'll lose 5 points.**

NOTE3: Students enrolled in 7318 will be required to submit longer papers—specifically, the minimum length is 12 instead of 8 pages. This applies to both the first and final draft.

NOTE4: following the proposal submission, we're going to have an in-class presentation. The exact format will be determined later.

LATE WORK

All assignments should be turned in via Canvas before the deadline as listed in the Preliminary Lecture Plan section (based on the timestamp on Canvas). The penalties for late work will be severe and non-negotiable (barring an excused absence). You will lose 1% of the possible grade for every minute past the deadline. For instance, if your proposal is late by an hour, your points will be deducted by 6 additional points (60% of the 10 points).

COMMUNICATION

Class announcements will be made through Canvas. The best way to reach me is via email. Please allow 24 hours to respond to your email. If you don't hear back from me within 24 hours, please feel free to send me a reminder.

ATTENDANCE

Occasionally, a quiz will be given in class. They serve two purposes: first, they provide an opportunity for everyone to review key concepts that were covered in the class. Second, they play a role in tracking attendance. Quizzes will not be graded, but failing to submit your answers due to nonattendance will result in a loss of attendance points. If you don't miss any quizzes, you will earn **5 points for attendance**. For each quiz you miss, you will lose 1 point (if you miss more than 5 quizzes, your attendance point will be 0). The instructor will determine the number and frequency of quizzes based on class needs. Many quizzes will be administered using iClicker. The University of Missouri provides a site license, so no additional subscription is required. You can download the iClicker app for Android or iOS, or use a clicker remote available at the bookstore. For further details, see [here](#).

If you miss a class for a non-emergency reason, it will be solely your responsibility to find out what was covered during that class. Please do not contact me for notes or assignments if you missed a class for non-emergency reasons. For the purpose of this policy, participation in a university-sanctioned event such as an intercollegiate athletic event will be treated as an excused emergency.

GRADES

Letter grades are based on the total points earned across all assignments and attendance listed above. For scale, see below. Note, any decimal points are rounded up to the nearest integer (i.e., 1.1 becomes 2).

A+ (97-100),	A (91-96),	A- (87-90),
B+ (85-88),	B (80-84),	B- (75-79),
C+ (72-74),	C (67-71),	C- (65-66),
D+ (62-64),	D (57-61),	D- (55-56),
F (0-55) – don't do this		

For students who are taking this course at the graduate level, see a separate scale below. Similar to the previous scale, any decimal points are rounded up to the nearest integer (i.e., 1.1 becomes 2).

A+ (97-100),	A (91-96),	A- (87-90),
B+ (85-88),	B (80-84),	B- (75-79),
C+ (72-74),	C (67-71),	C- (56-66),
F (0-55) – don't do this		

WRITING RESOURCES

The university offers a plethora of resources designed to enhance every facet of your writing process and elevate your final outcomes. I highly recommend you take advantage of these invaluable assets throughout the different stages of your writing expedition. The following excerpt is sourced from the Writing Center (<https://writingcenter.missouri.edu>) which perfectly encapsulates this sentiment.

The Writing Center is a free and confidential service available for your entire career at the University. Writing tutors are available to help all writers at MU with any stage of their writing process, on any writing task, including course-based assignments and application materials. Writing Center tutors will ask great questions and provide feedback and considerations for revision but will never discuss grades with or edit/write for students.

Writing support is available year-round via the Online Writery and synchronously via video or on-campus sites during fall, spring, and summer semesters. Students can access the Writing Center in the following ways:

- *To schedule an appointment with a tutor, log on to the Online Writery with your pawprint and password. The site will show you appropriate tutors for your writing needs, and you can view the campus site or Zoom options available in the "Location" column. You will receive:*
 - *A confirmation email with your appointment details, including a Zoom link for Zoom appointments*
 - *A reminder email the morning of your appointment*
 - *An email "receipt" the morning after your appointment, which you can forward to an instructor/professor for proof of attendance*

The Online Writery is also where you can submit a draft for review. This service is available 24/7/365, and generally provides a 24-to-48-hour turnaround. You will receive a confirmation email when you submit and another email when a tutor has responded.

ACCOMMODATIONS

Any student who feels that they may require an accommodation in this course, based on the impact of a disability, should contact the instructor as soon as possible to arrange for a meeting to coordinate all accommodations. Any student who wishes to seek accommodation (in particular for midterms) should also be sure to directly contact MU Disability Center (<https://disabilitycenter.missouri.edu>)

PRELIMINARY LECTURE PLAN

The course outline below is subject to change. It is your responsibility to keep up with any changes to the pace of the course. Some lectures will include material that is not covered in the text so attendance is important.

Week	Topic	Readings/Videos/Podcasts	Important Dates
1	Introduction, Environment and economy, Market Failures	K & O: Ch. 1,4 Fullerton and Stavins (1998)	
2-6	Policy Tools to Correct Market Failure Policy Responses: Real World Policies (Pay-as-you-throw, carbon tax, subsidies, exhaust standards, rebound effect, offsets, climate club, information interventions)	K \$ O: Ch. 5, 8, 9, 10 Market-Based Approaches to Environmental Policy: A "Refresher" Course	HW1 Due Feb 11, 11:59 PM Proposal Due Feb 18, 11:59 PM HW2 Due Mar 25, 11:59 PM
7	Midterm 1 (Review/Exam)		Midterm 1 Mar 5
8	Evaluating Environmental Policies: Cost Benefit Analysis, NPV	K \$ O: Ch. 2 (pp. 30-34) K \$ O: Ch. 3 (pp. 55-68)	
9	Environmental Justice	Banzhaf et al., (2019) Hernandez-Cortes and Meng (2023) Kansas City, NYT	
10	No class (Spring recess)		
11-12	Measuring Benefit (Hedonic, travel cost, defensive investments, SCC)	K \$ O: Ch. 3 (pp. 44-55)	First Draft Due Apr 1, 11:59 PM HW3 Due Apr 8, 11:59 PM
13-14	Managing Resources (Green paradox)	K & O: Ch. 6, 7	HW4 Due Apr 22, 11:59 PM
15	Midterm 2		Midterm 2 Apr 30
16	Managing Resources and remaining topics		Final Draft May 6 11:59 PM

LIST OF POSSIBLE TERM PAPER TOPICS (Subject to Change)

Below are two curated topics for the term paper. If you wish to choose your own topic, please seek approval by the end of Week 3. However, if you decide to propose your own topic, ensure you have a clear and well-defined idea. Past experiences indicate that students who work on their own topic often face significant challenges throughout the semester without a concrete plan. Any opinions of the authors of the listed resources do not necessarily reflect my own opinions; these resources are simply provided to get you started in your work. One way to find additional resources on your topic is to review the bibliographies of the listed resources, or use google scholar to find papers that cite them.

1. **How can we reduce methane emissions in the US?** In answering this question, think carefully about this important yet incomprehensive list of issues: (i) why should we worry about methane? (ii) what are the major sources of methane emissions in the US? (iii) what are major policies proposed or policies that are in place in the US? (iv) what are the costs and benefits of the policy (or policies)?

You can either focus on one policy from (iii) or compare different policy options from (iii). Throughout the essay, make sure to build a close connection to the class materials.

Possible sources:

Agerton, Mark, Ben Gilbert, and Gregory B. Upton. "The Economics of Natural Gas Flaring and Methane Emissions in US Shale: An Agenda for Research and Policy." *Review of Environmental Economics and Policy* 17, no. 2 (June 1, 2023): 251–73. <https://doi.org/10.1086/725004>.

Mohlin, Kristina, Maureen Lackner, Huong Nguyen, and Aaron Wolfe. "Policy Instrument Options for Addressing Methane Emissions from the Oil and Gas Sector." *SSRN Electronic Journal*, 2022. <https://doi.org/10.2139/ssrn.4136535>.

RFF Issue Briefs: <https://www.rff.org/publications/explainers/agricultural-greenhouse-gas-emissions-101>

<https://www.rff.org/publications/issue-briefs/measurement-gaps-mitigating-us-agricultural-greenhouse-gas-emissions-farm-bill/>

<https://www.rff.org/publications/issue-briefs/how-usda-conservation-programs-mitigate-agricultural-greenhouse-gas-emissions/>

<https://www.rff.org/publications/issue-briefs/reducing-agricultural-greenhouse-gas-emissions-through-climate-smart-markets-technical-innovation-and-emissions-credit-trading/>

<https://www.rff.org/publications/issue-briefs/the-policy-landscape-for-agricultural-bioenergy/>

The White House. "US Methane Emissions Reduction Action Plan," 2021.

2. **How can we reduce the environmental footprints of household consumption (with a particular focus on apparel consumption) in the US?** In answering this question, think carefully about this important yet incomprehensive list of issues: (i) What is the trend of apparel consumption? Why should we worry about apparel consumption (including but not necessarily limited to environmental issues)? (ii) What drove the recent spike in apparel consumption? (iii) how can we address them? What are the benefits and costs of the proposed measure? You can either propose a new policy or discuss the expected benefits

and costs of proposed policies from the EU (see the reference list).
Throughout the essay, make sure to build a close connection to the class materials.

Possible sources:

Allcott, Hunt, Benjamin B. Lockwood, and Dmitry Taubinsky. “Should We Tax Sugar-Sweetened Beverages? An Overview of Theory and Evidence.” *Journal of Economic Perspectives* 33, no. 3 (August 2019): 202–27. <https://doi.org/10.1257/jep.33.3.202>.

Brown, Paul M, and Linda D Cameron. “What Can Be Done to Reduce Overconsumption?” *Ecological Economics* 32, no. 1 (January 2000): 27–41. [https://doi.org/10.1016/S0921-8009\(99\)00093-2](https://doi.org/10.1016/S0921-8009(99)00093-2).

European Commission. Joint Research Centre. *Circular Economy Perspectives in the EU Textile Sector: Final Report*. LU: Publications Office, 2021. <https://data.europa.eu/doi/10.2760/858144>.

Lee, Seunghoon. “The Benefits and Costs of a Small Food Waste Tax and Its Implications for Climate Change Mitigation.” Mimeo, 2023.

Nikolina, Sajin. “Textiles and the Environment.” European Parliamentary Research Service, 2022.

“The Price of Fast Fashion.” *Nature Climate Change* 8, no. 1 (January 2018): 1–1. <https://doi.org/10.1038/s41558-017-0058-9>.

Schumacher, Kelsea A., and Amanda L. Forster. “Textiles in a Circular Economy: An Assessment of the Current Landscape, Challenges, and Opportunities in the United States.” *Frontiers in Sustainability* 3 (November 30, 2022): 1038323. <https://doi.org/10.3389/frsus.2022.1038323>.

Sharpe, Samantha, Elsa Dominish, Cristina Martinez-Fernandez, International Labour Organization., and ILO Regional Office for Asia and the Pacific. *Taking Climate Action: Measuring Carbon Emissions in the Garment Sector in Asia*. Bangkok: ILO, 2022. <https://doi.org/10.54394/WAWN5871>.

Tajeddine, Jeanine. “The Role of Influencers in the Overconsumption of Clothing.” *Spheres of Influence*, February 27, 2023. <http://spheresofinfluence.ca/the-role-of-influencers-in-fashion-overconsumption/>.

ADMINISTRATIVE MATTERS

ACADEMIC INTEGRITY

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor or the [Office of Academic Integrity](#).

Students are expected to adhere to this honor pledge on all graded work whether or not they are explicitly asked in advance to do so: "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work."

ACADEMIC INQUIRY, COURSE DISCUSSION, AND PRIVACY

When students record something that happens in a course (a lecture, class discussions, meetings, etc.) it has an impact on the rights of the people captured in that recording. For example, the instructor and the University may have rights to the intellectual property contained in that recording. At the same time, another student who may have been recorded has the right to privacy. In order to protect these rights, MU employs a policy (called "[Executive Order No. 38](#)") to govern both situations you may encounter while taking a course – when an instructor allows recordings and when they do not.

In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded.

Students who violate this policy are subject to discipline in accordance with provisions of [section 200.020](#) of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

FERPA

The [Family Educational Rights and Privacy Act](#) (FERPA) of 1974 is a federal law designed to protect the privacy of educational records; to establish the rights of students to inspect and review their education records; and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. The law applies to any individual who is or has been in attendance at an institution *and* regarding whom the institution maintains

educational records. Once students have matriculated to the University of Missouri, i.e. enrolled in course work, FERPA rights transfer to the student, regardless of the student's age.

Students can enable certain individuals to have access to their education records by signing a [FERPA waiver](#). The consent must specify records to be disclosed, state the purpose of the disclosure and identify the party or class of parties to whom the disclosure must be made.

INTELLECTUAL PLURALISM

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director, the [Office of Academic Integrity](#), or the [MU Equity Office](#).

MENTAL HEALTH

The University of Missouri is committed to supporting student well-being through an integrated network of care, with a wide range of services to help students succeed. The MU Counseling Center offers professional mental health care and can help you find the best approach to treatment based on your needs. Call to make an appointment at 573-882-6601. Any student in crisis may call or go to the MU Counseling Center between 8:00-5:00 M-F. After hours phone support is available at 573-882-6601.

Visit our website at <https://wellbeing.missouri.edu/> to take an online mental health screening, find out about workshops and resources that can help you thrive, or learn how to support a friend.

NETIQUETTE

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance.

RELIGIOUS HOLIDAYS & ACCOMMODATIONS

Many religious faiths are represented in the student body. The University of Missouri does not restrict student free exercise of religion, unless 1) the restriction is in the form of a rule of general applicability and does not discriminate against religion or among religions; and 2) it can be demonstrated that the application of the restriction is essential to furthering a compelling university interest and is not unduly restrictive considering the relevant circumstance. The policy

of the University attempts to strike a reasonable balance between accommodating the religious practice of students and meeting academic needs and standards.

Consult IDE's [Guide to Religions](#) for the form that can be used to notify an instructor of an absence associated with religious practice. Students are expected to notify their instructor(s) by completing and submitting this form in a manner that is consistent with the procedure outlined in the university's policy on student religious accommodation. Providing false information regarding sincerely held religious practice is a violation of the university's Standard of Conduct and will not be tolerated.

NONDISCRIMINATION POLICY (PROHIBITED DISCRIMINATION)

The University of Missouri does not discriminate on the basis of race, color, national origin, ancestry, religion, sex* (including gender), pregnancy, sexual orientation, gender identity, gender expression, age, disability, protected veteran status, and any other status protected by applicable state or federal law. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. *Sex discrimination includes rape, sexual assault, sexual harassment, unwanted touching, stalking, dating/domestic violence, stalking, and sexual exploitation. Retaliation for making or supporting a report of discrimination or harassment is also prohibited.

If you experience discrimination or sexual violence, you are encouraged (but not required) to report the incident to the MU Office of Institutional Equity. Learn more about your rights and options at equity.missouri.edu or call 573-882-3880. You also may make an anonymous report online.

If you are a survivor, or someone concerned about a survivor, and need immediate information on what to do, see [RSVP Resources page](#). Both the [Office of Institutional Equity](#) and the [RSVP Center](#) can provide assistance to students who need help with academics, housing, or other issues.

In the event that you choose to write or speak about having experienced any of these forms of prohibited discrimination or harassment, Mizzou policies require that, as your instructor, I share this information with the MU Office of Institutional Equity. They will contact you to offer information about resources, as well as your rights and options as a member of our campus community.

STUDENTS WITH DISABILITIES

The goal of the University of Missouri is to ensure an inclusive learning environment for all students. [The University of Missouri Disability Center](#) provides services and accommodations for students to participate fully in the learning experience and to experience equitable evaluation of their performance. Students (including online students) with a documented disability can contact the Disability Center to establish an [Accommodation Plan](#). Documented disabilities include *hearing, vision, mobility, learning and attention, psychological health, and physical health*. Students' accommodations are implemented with the input of students to maximize the

learning experiences. The MU Disability Center keeps information about a student's disability confidential.

Please notify me of your eligibility for accommodations as soon as possible. Additionally, if there are aspects of the course that present as barriers, such as inaccessible course content (e.g., learning assessments, PowerPoints, non-captioned videos, images, tables, PDFs) or if you need an immediate accommodation due to an injury, please contact me or the Disability Center as soon as possible.

STATEMENT FOR FACE-TO-FACE COURSES

This course is listed in the course catalog as a face-to-face course. The instructional activities planned for this course are designed for face-to-face interactions with your classmates and instructors. These activities often do not translate well over online video platforms. Because of this, it is up to instructor discretion whether asynchronous instruction or recordings of class activities are an appropriate substitute for regular classroom attendance. For specifics regarding excused absences or disabilities accommodations, please see the relevant section of this syllabus.