

# ECON 331: Environmental Economics

Fall 2025 Syllabus

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## Quick Reference Information

### Meeting Times

Class meets: MWF 12:15pm-1:15pm

Location: UU 102 (University Union 102)

### My Name & Contact Information

Case Tatro

Library Tower

ctatro1@binghamton.edu

### Office/Student Hours and Zoom Link

Zoom Link:

<https://binghamton.zoom.us/j/94345098969?pwd=SkR0WnV4L3VlaHpSQTRGM1dHVDhaUT09>

### Exam Dates

- Exam 1 (In Class): 9/19
- Exam 2 (In Class): 10/22

### Final Project Deadlines

- Choosing the Article/Forming Groups (**Not Flexible**): 9/8
- Summary of the Article (**Flexible**): 9/29
- Game Instructions (**Flexible**): 10/20
- Theoretical Predictions (**Flexible**): 11/7

- Presentation (**Not Flexible**): 11/27
- Final Paper (**Not Flexible**): 12/5
  - With all portions as described above.

## Grading

- Homeworks: 20% (Lowest 1 dropped)
- Quizzes: 10% (Lowest 1 dropped)\*
- Best Exam: 20%
- Worst Exam: 15%
- Final Paper: 15%
- 10-Minute Pitch Presentation: 15%
- Attendance/Engagement during Final Exam Games: 5%

## Recommended Textbooks

Tietenberg, Tom and Lynne Lewis, 2015. Environmental and Natural Resource Economics. **Any edition**

## Overview of the Course

Welcome to Environmental Economics (Econ 331)! In this course we are going to apply the tools you've learned in 160/360 (Intro/Intermediate Microeconomics) to environmental issues. While this class focuses on air/water pollution, the skills you will learn in these classes are applicable to any environmental issue! This class may be different to other economic classes you have taken, as I care about your ability to learn and apply the material rather than regurgitate definitions, formulas, or other material you could memorize for a test and then forget after taking this course. Instead my learning goals center on improving your microeconomics foundation, both conceptually and mathematically, and having you gain a deep understanding of how we can apply those concepts to environmental issues. This hopefully will also help you do better in your future economics courses! More specifically, by the end of this course I expect you to be able to:

- Analyze the relationship between market activity and the environment using marginal benefit-cost analysis.

- Apply theories of market equilibrium and failures to assess environmental problems.
- Understand and apply benefit-cost analysis to proposed environmental solutions and state the assumptions under which a solution is/is not economically feasible.

Basically, my broad goals for this class are that

1. You improve your conceptual framework regarding microeconomics, a framework you will continue to add to with each new economics class!
2. You are able to think critically about environmental and economic issues, and you can use diagrams from class to engage in thoughtful discussions with others inside and outside of economics.
3. You have a better understanding of microeconomics and be ready to apply your knowledge to your future economic classes/other classes you are interested in!

## **Tentative Course Outline**

1. Course Introduction
  - Course Introduction and Outline
  - Community Building
  - Thinking About Environmental Issues
  - Environmental Issues and Economic Analysis
  - An Overview of Environmental Economics
2. The Invisible Hand and Market Failures (Intro Micro Review)
  - Supply and Demand
  - Assumptions of Perfect Competition
  - Optimization in Economics
  - Externalities and Changes in Welfare
  - Governmental Interventions:
    - Pigouvian Taxes/Subsidies
    - Quotas
  - Non-Governmental Interventions: Coase Theorem
3. The Invisible Hand and Environmental Economics
  - The MAC-MDF curve

- Non-Governmental Interventions
  - Coase Theorem
  - Moral Suasion
- Governmental Interventions
  - Command & Control
  - Pigouvian Pollution Taxes
  - Tradable/Non-tradable Permits
  - Governmental Interventions & Non-Uniformly Mixing Pollutants

#### 4. **Exam 1: 9/19**

#### 5. Cost-Benefit Analysis and Environmental Problems

- The Discount Factor/Discount Rate
- Calculating Present Value – Finite and Infinite
- Continuous vs Discrete Time Discounting
- Net Present Value (NPV)
- Linear Amortized Cost (LAC)

#### 6. Valuing the Environment

- Revealed vs Stated WTP
- Market Valuation Generally
- Non-Market Valuation Generally
- Surveys as a Method: Pros and Cons

#### 7. **Exam 2: 10/22**

#### 8. Applications and Project Work

- WTP vs WTA Experiment.
- Using Economic Theory to Determine Optimal Use of Resources
  - How Much Oil to Use vs Clean Energy?
  - How Much Natural Resources to Extract (i.e. fish, timber, etc)?
  - How Much Pollution Should We Generate and Where?
- Where Might Economics NOT Capture the Full Picture?
  - Larry Summers Memo.
  - Cost-benefit analysis and oil spills.
  - Noise pollution.

- Maximizing Total Utility vs Maximizing Equity.
- **Last 3 days of class: Pitch Presentation Days**
- **Last day of class: Final Paper Due**

## 9. Final Exam Day: The 2 Winning Games

### Keys to Success and Studying Tips

This course may differ from other courses you have taken before in economics. I care about the degree to which you are able to understand the concepts in the course and apply them to a wide variety of situations. I want to test your ability to think like an economist using the tools/concepts from the course and my exam questions reflect this approach.

Instead of trying to memorize concepts or steps to solve a problem, when studying you should try to understand the concepts as well as you can. A good measure of how well you understand something is if you can teach it to someone else. While exams will be taken individually, I encourage you to work together on both homeworks and practice exams, and come see me in office hours if you get stuck or have questions.

### Structure of the Course

Assessing your ability to apply economic concepts to situations means that my exam questions will not simply test your ability to regurgitate information from the slides and/or class notes, nor will I test your ability to answer a similar problem to a homework question or example from class with different numbers. It is for this reason that many students consider my exams challenging. I have structured this course in a way to provide opportunities for feedback and for you to attempt the types of problems I ask in a low-stakes environment before each exam. Each part of the course structure is described below.

1. I release the at-home slides, which you will look over and take notes on before we go over the topic in class.
2. There is a ~5-question quiz, with 3 attempts, on the basic ideas of the slides due 60 minutes before the start of class covering that particular lecture. I drop the lowest quiz grade\*.
3. The first part of class I will cover any difficulties/confusion based on student feedback or quiz performance. The second part of class I will push the concept further with group-based practice questions and feedback.
4. I will issue 4 homeworks over the course of the semester. The homeworks are graded for completion, but I will provide feedback as if I was grading

for correctness. (**Collaboration with classmates is both allowed and encouraged.**) I drop the lowest homework grade.

5. About a week before an exam, I will provide a practice exam. I will post solutions approximately 3 days before the exam.
6. There will be a review class during the class period right before each exam.
7. The final project will give you the opportunity to do a deep dive into a particular environmental issue and how economic theory applies to a real life scenario!

## At-home slides

I will provide the slides at least 48 hours before we will cover a particular topic in class. I acknowledge that you all are capable of reading from slides at any time, and it is not the best use of class time to go through slides that you all can read at home. I would rather use class time to go over where you had trouble, and to spend time working on practice problems in groups where I can provide group and individual feedback. **Please note:** this means I will not be going through these slides in detail during lectures. You are welcome to bring any questions on the slides to office hours, or ask before/after class. The point of the slides is to help you be prepared to learn/refer back to, not to memorize them!

## At-home pre-quizzes

For each set of slides, I will post a brief ( $\sim 5$  questions) quiz on Brightspace at the same time as I release the at-home slides. The quiz will be due 60 minutes prior to the start of class in order to assess where students had issues with a particular set of slides and if we need to spend a few minutes in class going over particular slides or concepts. **You will have 3 attempts for each quiz before the due date.** The deadline is one hour (60 minutes) before class so that I have enough time to look at the results and determine what I should cover during the first part of class.

I drop the lowest quiz grade of the semester. **If you attend office/student hours at least once before Exam 1, I will drop your second-lowest quiz grade at the end of the semester.**

## Class “lectures”

I will not lecture in class. That is why the slides will be available to read at-home before class. Instead I will use the quiz results to cover anything from the slides that were especially challenging. This may include going over some of the quiz questions, but in general I will simply provide the answers to the quiz after class.

The second part of class will be devoted to pushing your understanding of the concept further. This will mainly involve asking questions to the class and working on problems in small groups. I will walk around during this group-work and provide feedback to groups and individuals as well as answer questions.

## Homeworks

As noted above, I will give out 4 homeworks this semester. I will give you at least 1 week to complete each homework from when I post the homework. Homeworks are due at the start of class. I prefer handwritten homeworks, but you may also submit on Brightspace. Please staple your homework if it is multiple pages and include your name on your homework! If you submit on Brightspace, you must submit the files as a .pdf, .docx, or .doc so my computer can open it. You may also email me your homework if Brightspace is having issues. If you accidentally submit your homework electronically in an incorrect format, I will give you 24 hours to resubmit the homework in the appropriate homework or you may slip a handwritten copy under my door.

A simple way to convert your handwritten work to a PDF file is to use software that utilizes the camera on your smartphone to create a PDF file. Examples of such software are CamScanner and Adobe Scan (both available as free downloads). The Notes app on iPhones and iPads also creates PDF files using the device camera.

You absolutely may collaborate on homeworks with classmates. **Each person must write-out their own answers, and you must write the names of the other people you worked with.** While I cannot verify, homeworks will be less helpful if you are dividing a homework and each doing specific questions and simply copying other answers from the group.

## Practice exams & review class

I will post a practice exam approximately a week before an exam. The practice exam will be similar to the exam in terms of content, but the questions will be different. I will provide solutions approximately 3 days before the exam date. During the review class, the lecture right before the exam, I will answer any questions on the practice exam, homeworks, or general concepts.

## Exams

My exams all follow the same format. I will ask you 5 true/false questions, 5 multiple choice questions, and approximately 8-10 short answer questions. (I count each part as a question, so if question 1 has parts (a), (b), and (c) I consider that 3 short answer questions). Both exams will be during class, and I will adjust the number

of questions to make sure the time we have in class is plenty of time in which you can complete the exam. **Note:** If you correctly explain a correct false answer on the True-False portion of the exam, I will give you a bonus point.

### **Exam Cheat Sheet**

For each exam I require you to bring an 8.5"x11" "cheat sheet" into the exam. You can write on both sides of the paper and use your cheat sheet during each exam. This cheat sheet should contain formulas/graphs/information you can reference during the exam, and should not be a copy and paste of the practice exam questions. The cheat sheet must be turned in with your exam and is worth up to 5% of the total exam points. (I.e. if the exam is 70 points the cheat sheet will be worth 7 points, for an overall total points possible of 77.) If you copy and paste the practice exam or homework/quiz questions you will not receive credit for your cheat sheet. Making a cheat sheet is part of the studying process and so I will give you credit for doing it well!

### **Final Paper/Presentation**

There is not a final exam in this course. Instead there is a final group project described in the Final Project Guidelines and Final Project Grading Rubric documents available on Brightspace.

## **Grading**

I realize with a challenging course, grades and grading are a source of stress/anxiety. I also realize test-anxiety hinders performance on exams, and that you as students have a lot going on. Here are some ways I attempt to reduce stress in my class:

1. You know what the exam format is from both homeworks and the practice exams.
2. Quizzes, in-class group problems, homeworks, and office hours are opportunities for you to receive feedback prior to an exam.
3. The weighting of the exams is lower for your worst exam and higher for your best exam.
4. 30% of your grade comes from completing homeworks and correctly answering the quiz questions, and the drops account for the fact that everyone needs to miss class/assignments sometimes.
5. 30% of your grade comes from the final project which is not timed and depends on your effort more than getting questions correct.



6. Attendance during class is not directly graded.
7. 5% of your grade is from showing up for the final exam games and being active in the games we play!

That being said, I will not curve exams during the semester. Instead, I will assess average performance of the class as a whole. The better the average on the two exams, the more likely I think it is that on average the class understands economics, and the higher the average grade in the class. **You should aim for the highest grade on each exam you can, and you should work with others in the class.** Think of it not as competing within your class, but competing as a class to demonstrate to me your collective understanding of economics, and competing against how I think the average student would do on my exams.

## My Policies

### Device Policy: No Devices Unless Written Exemption

The literature shows that students who write their notes down on paper tend to have better retention than students who type up their notes. Also, laptops can be distracting for both the student using laptops and those around students using laptops. Therefore, I do not allow students to use electronic devices (laptops, tablets, phones, etc) while in class. If you do really want to use a device to take notes (i.e. an iPad), send me an email explaining why you want an exemption and for which device. I will make each decision on a case-by-case basis.

### Generative AI: i.e. Chat GPT

A big part of this class is the final project/presentation in which you get to apply what you learn about environmental economics to the real world and real problems! You also get a chance to improve your written and public speaking communication skills. Therefore the words on your paper and your presentation should be your own, not those from Chat GPT or another AI. I will consider use of Chat GPT on your final project as akin to plagiarism.

I will make the slides for each lecture available at least 24-hours beforehand to give you enough time to be able to print the slides and bring them to class if you wish. Tip: You can print 4 slides per page in order to conserve your library printing budget, and can print on both sides.

### Attendance: Strive for Perfect Attendance

I work hard to make sure that class time is worth your time, and that the material in class will be engaging, useful, and helpful. While I do not directly grade attendance

you should strive for perfect attendance! That being said life happens and sometimes you may have to miss class. I ask that you send me an email to let me know you will miss class, but I do not need any proof about why you are unable to make it to class. Use the slides and notes from a classmate to see what you can pick up. You can come to office hours to ask any remaining questions you have.

Caveat: Please do not come to class if you are sick. Simply send me an email that you are not able to make it beforehand

## **Email & Communication Guidelines**

If you need to send me an email, please include “Econ 331” in the subject of the email. Also note that you are welcome to send me an email at anytime, but I only reply between 9am and 5pm during the week for most emails. If I get the same question from multiple people I will post the question & answer on Brightspace rather than answer individual emails. I will answer short questions via email, but if it would take more than 1-2 sentences to answer it will be better for all of us if you come in to ask those questions during office hours.

## **University Policies**

### **Academic Honesty: Honor Code**

Students in this course are expected to observe the Student Academic Honesty Code and should make sure they are familiar with its provisions. Violations of the code (for example, cheating on exams) will be prosecuted as specified in the Code.

There are places for Chat GPT in this class. You may ask it to explain concepts or problems, or to generate practice problems. Keep in mind, however, that Chat GPT does hallucinate and the explanation/answers it provides may not be correct. It is up to you as a student to evaluate if the information you find on Chat GPT or the internet in general is correct/credible or not. I am happy to answer questions in office hours if you are struggling to understand resources on class-material you find outside of class!

### **Disability-related Equal Access Accommodations**

Please let me know as soon as possible if you have any accommodations for the class. See the SSD website (<http://www.binghamton.edu/ssd>) for more detailed information. The office is located in University Union, 119.

## Resources and Support Available to Students

I am available to talk with you about stress related to work in my class. If you are having a hard time with other classes or life in general, I can help you reach out to one or several resources on campus designed to help you. Please keep in mind as a Professor I am a mandatory reporter and may not be able to keep conversations confidential depending on the situation.

- Dean of Students Office: 607-777-2804
- Decker Student Health Services: 607-777-2221
- UPD: 911
- University Counseling Center: 607-777-2772
- Interpersonal Violence Prevention: 607-777-3062
- Harpur Advising: 607-777-6305
- Office of International Student/Scholar Services: 607-777-2510
- Ombudsman: 607-777-2388
- Services for Students with Disabilities: 607-777-2686