

Environmental Economics and Policy
ECON 4220
Fall 2017
Section 003 (CRN 83349):
Tuesdays and Thursdays, 9:30am-10:45am, Aderhold Learning Center 12
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Office: AYS 436
Office Hours: Tuesdays and Thursdays, 11:00am-12:00pm

Prerequisites: Econ 2106 (Principles of Microeconomics)

Catalogue Description:

This course is designed to introduce the student to a broad range of contemporary environmental problems and the design of appropriate policy responses. Environmental concerns such as declining urban air quality, water pollution, tropical rain forest destruction, and global warming are covered (topics vary according to the instructor). The role of economic development and the political and social forces determining environmental quality are explored. The effectiveness of past and present environmental policies and regulations are evaluated and contrasted with newer, more flexible approaches to improving environmental policy. This course is designed for students majoring in all disciplines who have interests in public policy as it relates to managing the environment.

Course Objective:

The goal of ECON 4220 is to provide an introduction to how the economic way of thinking applies to environmental policy.

Method of Instruction:

ECON 2106 is taught through a combination of lecture, discussion, group projects, and examinations. Class interaction allows the students to discover the strengths and weaknesses of alternative policy recommendations.

Course Materials:

iClicker (required):

You will be required to answer in-class questions using the *iClicker* remote response system. To do so, you have **two options**:

1. You can download the iClicker Reef app to your mobile device (phone or tablet – not laptop) and use that in class. The app is free, but you will have to buy a [subscription](#) – starting at \$14.99 for six months – to use it.
2. Or, you can purchase an iClicker remote response device. Either an iClicker 2, an iClicker +, or an iClicker "first generation" is acceptable. You may use a device that you have used in previous classes, and you may use this device in other classes. New devices cost about \$40 to \$50 online or in the campus bookstore. Used devices are available online for as cheap as \$10, though (I think) you must also pay a one-time activation fee of about \$7 if you buy a used device.

Whether you use an iClicker device or your smartphone or tablet, you will need to bring it to class every day. The iClicker will be used to take attendance (which is mandatory and part of your grade) and answer in-class questions (which are mandatory and part of your grade).

Recommended (not required) Textbooks:

There is no required textbook. The following three books are recommended.

Environmental & Natural Resource Economics, 10th edition, by Tom Tietenberg & Lynne Lewis, publisher: Pearson.

Environmental Economics: An Introduction, 6th edition, by Barry Field & Martha Field, publisher: McGraw-Hill.

Principles of Microeconomics (or Principles of Economics), 1st edition, by Dirk Mateer & Lee Coppock, publisher, W.W. Norton. Available in hardcopy or ebook format.

Other:

- Access to GSU's learning management system, iCollege (formerly called Brightspace, formerly called Desire2Learn (D2L)), is required. It is recommended that students check the iCollege course website at least once between class meetings. Students may set up notifications in iCollege so that they are automatically alerted to new iCollege emails and announcements. iCollege can send such notifications to an email account of their choice or via text messaging. Student help for iCollege can be found [here](#).
- Grades are posted on iCollege. At any point during the semester, students are able to log on and check their current course grade.
- Please check your email at least once per day. Many emails sent to the class will be sent via iCollege, and they should be automatically forwarded to students' GSU email addresses. To reply to an email sent by the instructor via iCollege, the student must either 1) log into iCollege to reply, or 2) reply via their email but replace the "to" address with the instructor's GSU email address: gheutel@gsu.edu.
- It is critical that students have access to a reliable internet connection throughout the semester, especially because of the required online material. There are multiple computer labs on campus that students may use; see <http://technology.gsu.edu/technology-services/it-services/labs-and-classrooms/computer-labs/> for more information about locations and hours.
- A calculator (for exams) is recommended.

Course Learning Objectives:

The student will be able to:

1. Understand and apply the basic theory from the prerequisite class in microeconomics (see learning objectives for Econ 2106) to environmental policy.
2. Explain the invisible hand theory, and determine the conditions under which it applies and the conditions under which it does not.
3. Explain what is meant by an externality, derive the difference between a social optimum outcome and market equilibrium, calculate the deadweight loss from an externality, and derive the efficient policy response.
4. Define a public good, derive the socially optimal level of provision, and demonstrate the free-rider problem.
5. Understand market failures from market power and asymmetric information.
6. Define and apply the principles of benefit-cost analysis, define net present value, and calculate net present value for a given economic decision.

7. Compare and contrast the different methods that can be used to value the environment.
8. Determine an efficient allocation of pollution, and derive cost-effective policies for uniformly-mixed and nonuniformly-mixed pollutants
9. Understand the distinction between command-and-control regulations and market-based regulations.
10. Compare and contrast the policy issue of climate change with the issue of conventional air pollutants, and understand the history of domestic and international efforts to regulate greenhouse gases.
11. Describe the externalities associated with automobiles and the history of their regulation.
12. Summarize the economic and policy issues associated with water pollution.
13. Summarize the economic and policy issues associated with toxic substances, and understand the concept of environmental justice.
14. Describe the economic and policy issues related to sustainable development and trade and the environment.
15. Explain how economists use markets to solve environmental problems, and explain, through the lens of economic theory, how regulations, environmental taxes, and marketable permits function.
16. Identify key attributes of a specific environmental problem that are amenable to study using economic methods and concepts.

Grading Policy:

See the table for details on how grades will be determined.

Component of Grade	Weight	Date/Deadline
Midterm exam #1	12.5%	Tuesday September 12
Midterm exam #2	12.5%	Thursday October 5
Midterm exam #3	12.5%	Tuesday November 7
Final exam	12.5%	Thursday December 7 8:00am-10:30am
Group presentation and paper	20%	Due: Wednesday November 8 Presentations: November 9, 14, and 16
Mini-Essays	10%	Due: September 7, October 3, November 2
Participation (iClickers)	15%	Daily
Attendance	5%	Daily
Total	100%	

The overall course grade is calculated in iCollege, and at any point in the semester, students may see their current overall grade in iCollege. Overall course grades are rounded to the nearest hundredth of a percent (two decimal points). End-of-semester letter grades will be assigned based on the overall course percentage grade according to the following:

- 100.00% and higher: A+
- 94.00% – 99.99%: A
- 90.00% – 93.99%: A–
- 87.00% – 89.99%: B+
- 84.00% – 86.99%: B

- 80.00% – 83.99%: B–
- 77.00% – 79.99%: C+
- 70.00% – 76.99%: C
- 60.00% – 69.99%: D
- 59.99% and lower: F

Although unlikely, a curve *may* be imposed at the discretion of the instructor. If so, grades will only be curved upwards and never downwards. Thus, a curve will never hurt you and may help you. However, you should not count on there being a curve.

Midterms and Final Exams:

- The midterm exams and final exam will be administered in class, using Scantron sheets for multiple-choice questions and paper for short-answer questions. Students must bring a #2 pencil and scratch paper to the tests, and a calculator is recommended. A cell phone may not be used as a calculator.
- No notes, books, laptops, cell phones, or other materials are allowed during the midterms and final exam.
- Georgia State University and the Department of Economics have strict expectations of academic integrity. For any exams/quizzes, it is expected that such exams/quizzes be the student's independent, individual work without assistance. Assistance from any persons, notes, books, consultations, groups, electronic devices, previous course exams, or any other sources is strictly prohibited and considered to be a breach of academic honesty. A breach of academic honesty has serious consequences including expulsion. The University's academic honesty policy can be read [here](#).
- All free-response, essay, and short-answer questions are expected to be written in the student's own words.
- There will be **no make-up** exams. A missed midterm or final exam will count as a zero.

Group Presentation and Paper:

- Students will be assigned to groups of 3 or 4 students to complete a 15-minute long group presentation using PowerPoint and turn in a 5-10 page paper (one paper and one presentation per group). If you have a preference over the members of your group, let me know by email no later than **Friday, September 15** at noon. Any students with no group requests by then will be randomly assigned to a group. For each group, all members will receive the same grade, with no exceptions.
- A list of topics will be provided. Before **Friday, September 22** at noon, each group must email me its preference ranking among the possible topics. I will assign topics to groups based on these preferences (avoiding duplicate assignments).
- During the class meetings of **October 10 through October 26**, each group will meet individually with me during the end of class time to discuss their research. Meetings will be scheduled randomly and announced in advance. In advance of this meeting, each group should have at least an outline for the paper and presentation, and preferably a rough draft.
- The 5-10 page paper and the PowerPoint slides are due **Wednesday, November 8** at 5:00pm. Both documents are to be turned in via the Dropbox page in iCollege. No late assignments will be accepted.
- The presentations will be held in-class on **November 9, 14, and 16**. I will randomly determine the order of the presentations.
- Optional (but strongly recommended): you may turn in a rough draft of your paper and/or PowerPoint slides by **Wednesday October 25** at 5:00pm. If I receive them by this date, then

I will read them and provide you with comments by Wednesday November 2, and you can revise the draft based on these comments.

- All papers are to be written in the student's own words and will (automatically) be run through a plagiarism check in iCollege.
- More details about the paper and presentation requirements will be provided later in the semester.

Mini-Essays:

- At the end of each of the first three sections of the course (before midterms #1, 2, and 3), students will turn in a mini-essay (about 500 words, 2-pages double-spaced 12-point font) about a recently-written news article and how it relates to the class topics.
- Students may submit these essays **individually** or in **groups** of up to 4 students. The group for these essays does not necessarily have to be the same group as for the Group Presentation and Paper. The group does not need to be the same for each of the three essays. Please write all students' names on each essay submitted. Essays will be turned in via the Dropbox page in iCollege; only one copy of each essay per group needs to be uploaded.
- For each essay, find a recently-written news article to discuss. Please find an article written/published within the previous ninety days. A Google news search is a good place to start. Article may appear in websites like nytimes.com, wsj.com, washingtonpost.com, ajc.com, guardian.com, foxnews.com, etc.
- The first paragraph of your essay will summarize the news article.
- In the remaining paragraphs, you will discuss how this article relates to what we have studied in class.
 - For mini-essay #1, discuss how the article relates to the issues of **the invisible hand** and **market failure**. This article does not *necessarily* have to be about environmental policy.
 - For mini-essay #2, discuss how the article relates to the issues of **cost-effective** and **efficient** policy design. This article will *probably* be about environmental policy, but you may also find a relevant article about other policies (e.g. tax policy, health care policy, etc.)
 - For mini-essay #3, discuss how the article is related to one of the **environmental policies** that we studied in class.
- All essays are to be written in the student's own words and will (automatically) be run through a plagiarism check in iCollege.
- More details about the essay requirements will be provided later in the semester.

Participation (iClickers):

Your participation grade is based on your iClicker responses to questions asked in class. Some questions will be opinion questions with no right or wrong answer, and you will get credit for any response. Other questions have a right answer, and you will only get credit for the correct response. These questions are designed to be easy to answer if you have read the textbook and paid attention to the lectures.

In addition to points from iClicker responses, the participation grade may also be determined by occasional in-class assignments (for example, writing prompts).

Attendance:

Attendance is mandatory. Attendance will be taken every day using the iClickers. If you are present in class but do not have your iClicker or phone with you, then you must come up to me in person immediately after class, or else you will be marked absent.

You are allowed one unexcused absence without penalty. Two unexcused absences will drop your attendance grade to zero. If you have three unexcused absences, you are removed from the course. Excessive tardies will be counted as an absence. Excessive inattention during class (for example, texting) will be counted as an absence.

Excused absences are recognized in the following cases: University-sponsored events, legal obligations, and religious observances. Acceptable excuses must be requested and approved by email by the instructor before the date of absence. Any absence without a prior approval by email by the instructor will be counted as an unexcused absence. If the unexcused absence occurs on a midterm date, the midterm grade will be zero and no make-up will be allowed. Work obligations and illness are not considered grounds for an excused absence.

The University's attendance policy can be read [here](#).

There is a seating chart for the class so that I am able to learn students' names and call on students by name. If you have any request for where you would like to sit, please email me before the beginning of the semester. For those students who do not email me a seat request before class begins, I will assign seats at random.

Twitter:

I will be using Twitter to post about the course using the hashtag #Econ4220. This will include news stories and other features from the internet that are relevant to the course. All students are strongly urged to participate in the conversation on Twitter by replying, retweeting, or posting using the hashtag #Econ4220. Students can also ask and answer course-related questions on Twitter.

Important Notes:

1. The course syllabus provides a general plan for the course; deviations may be necessary.
2. All students are responsible for knowing and adhering to [GSU's Policy on Academic Honesty](#) as published in [Student Code of Conduct Handbook](#).
3. Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation.
4. Students who wish to request accommodation for a disability may do so by registering with the [Office of Disability Services](#). Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.
5. Students who withdraw after the midpoint of each term will not be eligible for a "W" except in cases of [Emergency Withdrawal](#).
 - a. [Withdrawal Policy](#)
 - b. [Repeat to Replace Policy](#)
 - c. [Grade Appeal and Change \(including Incomplete Grades\) Policy](#)
6. Important University dates can be found at <http://registrar.gsu.edu/registration/semester-calendars-exam-schedules/>
7. Georgia State University values diversity and is committed to fostering and maintaining an educational environment which appreciates individual differences in all areas of operation including classroom instruction, texts, and materials. To this end, any actions, practices, or processes by any faculty, staff person, or student that discriminates against or is prejudicial

toward any person or group based on race, gender, age, religion, ethnicity, nationality, disability, sexual orientation, or socioeconomic status will not be tolerated.

Miscellaneous Requests/Advice:

- No talking to your neighbors during class, even if you are discussing the class. If you have questions raise your hand, or wait to ask them during office hours.
- No cell phone or tablet use during class, except to respond to the iClicker questions. No texting, web surfing, etc.
- No laptop use during class. Please take notes using paper and pen/pencil. There are many studies that find note-taking by hand is much more effective than using a computer; see [here](#) and [here](#) and [here](#).
- A rule of thumb for college courses is that you spend *three* hours per week working on the course (studying, completing assignments, reading) for every *one* hour that the course meets. For this course that means you should expect to work about *nine hours per week* in addition to the lectures.
- To succeed in this class, you should
 - Complete all of the assigned reading before the day of class, reading carefully and taking notes.
 - Come to each class, pay attention, and take notes.
 - Complete all practice exams, making sure that you understand each problem.
 - Come to office hours whenever you have questions, especially early on in the course. If you score lower than a B (80%) on any midterm, you should come to office hours to discuss it.
- This course has **high expectations**, and you can meet them.

Calendar:

Please complete the assigned reading for each day **before** the day's lecture.

Textbook readings are recommended but not required. **TL** refers to the Tietenberg and Lewis textbook; **MC** refers to the Mateer and Coppock textbook; **FF** refers to the Field and Field textbook.

Week	Tuesday	Thursday
1	<p>August 22 Introduction</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Environmental Economics by Bozeman Science (10-minute video) • 10 Things Everyone Should Know About Environmental Economics by Stephen Smith • The Invisible Hand (2-minute video) <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 1, p. 1-14 • FF Chapter 1, p. 2-19 • FF Chapter 2, p. 30 • MC Chapter 1, p. 4-23 	<p>August 24 Efficiency</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Deadweight Loss, Consumer and Producer Surplus (5-minute video) <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 2, p. 15-24 • FF Chapter 4, p. 60-66 • MC Chapter 6, p. 176-207
2	<p>August 29 Market failure – externalities</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Market Failures, Taxes, and Subsidies: Crash Course Economics #21 (12-minute video) • Why do economists describe climate change as a 'market failure'? • Market Failures, Public Goods, and Externalities (just read "Definitions and Basics") <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 2, p. 24-30 • FF Chapter 4, p. 66-72 • MC Chapter 7, p. 212-219 	<p>August 30 Market failure – public goods</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Public Goods by Matthew Kotchen • A Deeper Look at Public Goods (8-minute video) <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 2, p. 30-32 • FF Chapter 4, p. 73-77 • MC Chapter 7, p. 219-237

3	<p>September 5 Other Market Failures</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Monopoly Power • Do Monopolies Undermine the Environment? by Jason D Scorse • Moral Hazard (4-minute video) <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 2, p. 32-45 • MC Chapter 10, p. 302-331 • Google is Big. Is That Bad? (16-minute podcast) 	<p>September 7 Review for midterm Mini-Essay #1 due, 5pm</p>
4	<p>September 12 Midterm exam #1</p>	<p>September 14 Trade-Offs</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Discount rates: A boring thing you should know about (with otters!) by David Roberts • Cost-benefit analysis <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 3, p. 46-72 • TL Chapter 6, p 111-124
5	<p>September 19 Valuation</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Should We Put A Dollar Value On Nature? by Judith D. Schwartz • Summary of Nonmarket Valuation Methods <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 4, p. 73-104 • FF Chapter 7, p. 144-152 • Valuing the Environment by Sharon Beder • Valuation of Ecosystem Services (set of 11 short videos) 	<p>September 21 Efficiency and cost-effectiveness</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Optimal Pollution • Economic Considerations: Cost-Effective and Efficient Climate Policies (30-minute video) <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 14, p. 343-351 • FF Chapter 9, p. 174-184 • The Coase Theorem is widely cited in economics. Ronald Coase hated it. by Timothy B. Lee

6	<p>September 26 Cost-effectiveness</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Incentive-Based Regulatory Approaches: Environmental Taxes & Tradable Permits (just first 4 minutes of video) • Econ 101: An Emissions Tax • Carbon pricing most cost-effective way to reduce carbon emissions, says OECD by Oliver Milman • Believe it! Pollution taxes would help the poor and our environment more than the current system by Arik Levinson <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 14, p. 351-358 • FF Chapter 12, p. 221-240 • How Property Rights Could Save the Environment by Megan Mcardle • What's a carbon tax? 	<p>September 28 Tax vs. Cap-and-Trade</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Carbon Tax and Cap and Trade (9-minute video) • How Cap-and-Trade Works <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 14, p. 359-377 • FF Chapter 13, p. 245-260 • Lessons Learned from Three Decades of Experience with Cap and Trade by Schmalensee and Stavins • The Corporate Agenda for Environmental Property Rights by Sharon Beder • Tradable Pollution Permits as a Remedy for the Negative Externality By Eric Dahlberg
7	<p>October 3 Review for midterm Mini-Essay #2 due, 5pm</p>	<p>October 5 Midterm exam #2</p>

8	<p>October 10 Stationary-source pollution</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Economic Incentives versus Command and Control: What's the Best Approach for Solving Environmental Problems? • Summary of the Clean Air Act • Criteria Air Pollutants • The US sulphur dioxide cap and trade programme and lessons for climate policy • Cap and Trade Curbed Acid Rain: 7 Reasons Why It Can Do The Same For Climate Change by Justin Gerdes <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 15, p. 378-398 • FF Chapter 2, p. 31-37 • Southern California Air Quality Board Set to Vote On Stricter Emissions Standards 	<p>October 12 Mobile-source pollution</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Corporate Average Fuel Economy (CAFE) standards • What are the CAFE standards, and why do they matter? • The Unintended Consequences of Ambitious Fuel-economy Standards • Donald Trump's Very Good Idea: Raise the Gas Tax <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 17, p. 420-444 • FF Chapter 15, p. 307-315 • Did 'Cash-for-Clunkers' work as intended? • Why the Government's CAFE Standards for Fuel Efficiency Should Be Repealed, not Increased
9	<p>October 17 Water pollution</p> <p>Required reading:</p> <ul style="list-style-type: none"> • How tap water became toxic in Flint, Michigan • 5 Years After BP Oil Spill, Effects Linger And Recovery Is Slow • Atlanta Tap Water Has Contaminants, Advocacy Group Says • Watershed-Based Pollutant Trading —An Idea Whose Time Has Come <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 18, p. 445-479 • FF Chapter 14, p. 264-289 • Economic Incentives to Control Water Pollution in Developing Countries: How Well has Colombia's Wastewater Discharge Fee Program Worked and Why? • Program Overview: Total Maximum Daily Loads (TMDL) 	<p>October 19 Environmental justice</p> <p>Required reading:</p> <ul style="list-style-type: none"> • The Political Economy of Environmental Justice by H. Spencer Banzhaf • Learn About Environmental Justice • Flawed environmental justice analyses • Learn about the Toxics Release Inventory <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 19, p. 490-507 • FF Chapter 16, p. 337-338 • The Benefits of Cleaning Superfund Sites • Job Safety

10	<p>October 24 Sustainable development and urbanism</p> <p>Required reading:</p> <ul style="list-style-type: none"> • NAFTA's Impact on Mexico • Environmental Kuznets Curve • If you love nature, move to the city <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 20, p. 508-530 • FF Chapter 21, p. 419-439 • Sustainability, Well-Being, And Economic Growth <p>Career Services – class visit (tentative)</p>	<p>October 26 Climate Change</p> <p>Required reading:</p> <ul style="list-style-type: none"> • Overview of Greenhouse Gases • What is climate change adaptation? • What is Climate Engineering <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 16, p. 399-407 • FF Chapter 18, p. 364-382 • Is Carbon Dioxide a Pollutant? • Can game theory help solve the problem of climate change?
11	<p>October 31 Climate Change</p> <p>Required reading:</p> <ul style="list-style-type: none"> • The Economics of Climate Change (read article; watching 1-hour video is optional) • Where Carbon is Taxed • Key Points of the Paris Climate Pact • 6 Obama climate policies that Trump orders change <p>Recommended Reading:</p> <ul style="list-style-type: none"> • TL Chapter 16, p. 407-419 • TL Chapter 21, p. 531-540 • Fact or Fiction?: Natural Gas Will Reduce Global Warming Pollution 	<p>November 2 Review for midterm Mini-Essay #3 due, 5pm</p>
12	<p>November 7 Midterm exam #3</p>	<p>November 9 Group presentations</p>
13	<p>November 14 Group presentations</p>	<p>November 16 Group presentations</p>
14	<p>November 21 No class – Thanksgiving break</p>	<p>November 23 No class – Thanksgiving break</p>
15	<p>November 28 Review for final exam</p>	<p>November 30 Review for final exam</p>
16	<p>December 5 No class</p>	<p>December 7 Final Exam –8:00am-10:30am</p>