

PUBP 6312: Economics of Environmental Policy

TR 12:00 pm – 1:15 pm | Clough Commons 250 | spring 2018

Instructor: Dr. Emanuele Massetti

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Contacts and office hours

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- Office hours: T 2:30 pm – 3:30 pm (walk-in) - Thursday 2:30 pm – 3:30 pm (by appointment with 24 hour notice)

Overview and broad learning objectives

This course provides a rigorous introduction to environmental economics at the advanced undergraduate or master level. As the class has no formal pre-requisites and is open to all majors, emphasis is on the economic intuition rather than on advanced formal treatment.

At the end of semester students from all backgrounds will be able to:

1. Frame environmental problems in economic terms and appreciate that economic motivations may be very powerful in protecting the environment and they can be effectively used as a complement to other moral and philosophical arguments.
2. Master the economics of environmental policy.
3. Critically discuss the most pressing environmental problems and policy solutions.
4. Read and critically review most of the literature on environmental economics, with the exception of the most technical papers that require advanced microeconomics and econometrics.
5. Take more advanced Ph.D. classes in environmental economics.

The material that will be covered is divided in five parts.

1. **Introduction to environmental economics.** This part teaches how to frame environmental problems in economic terms. It introduces the concepts of economic efficiency, consumer and producer surplus, externalities, public goods and tools such as cost-benefit analysis. Discounting of future benefits of environmental benefits is examined in detail for the importance it has in climate change policy.
2. **The economics of environmental policy.** This part introduces economic tools to address environmental problems and it reviews policy experiences in many sectors and countries.
3. **Evaluation of environmental policy benefits and costs.** This part covers methods used to estimate the costs and benefits of environmental policy. Methods used by economists to provide an economic valuation of non-market goods, such as ecosystems or human life, are covered in detail and critically reviewed.

4. **Natural resources and sustainable development.** This part introduces the conditions for efficient use of water, forests, land and non-renewable resources such as oil and it frames sustainable development as an optimal economic growth problem in which individuals maximize long-term economic welfare.¹
5. **Climate change economics.** The final part of the semester deals with the pressing problem of climate change. Students learn how to build a model that allows to study efficient economic climate policy and are exposed to the most recent development on climate change economics.

Assessment

Class quizzes	10%
Homework	20%
Midterm Exam	30%
Final Exam	40%

Grading Scale

A: $\geq 90\%$; $80\% \leq B < 90\%$; $70\% \leq C < 80\%$; $50\% \leq D < 70\%$; $F < 50\%$.

Class quizzes

Closed-book class quizzes at the beginning of class will test the preparation of the assigned readings. Reading the assigned material is very important because it allows students to maximize class participation. Students that do not come to class or arrive early will not receive a quiz grade.

Assigned readings, from the textbook and other sources, are posted on Canvas generally two weeks or more before class.

The quizzes may consist of multiple choice and open-ended questions. At the end of the semester, the grade will be calculated as $[(\# \text{ of credits gained}) / (\text{total number of credits})] * 0.10$. Students that miss at most 2 classes will receive 2 bonus points.

Justified absences are for medical or serious academic or professional reasons (e.g. conferences, job interview). The student is responsible to send either a medical certificate or a proof of academic or professional meeting by email no later than 48 hours after the absence has occurred.

Homework

Five problem sets are assigned to train students to solve problems in environmental economics. Homework tests the ability of critically reviewing the class material, problem solving skills and the ability to do independent research. Solving the assigned problems is very important to get ready for the midterm and final exams.

Problem sets are due in class in paper format on the day marked in the calendar at the end of the syllabus. Detailed solutions to problem sets are provided shortly after they are due. The most challenging problems are reviewed in class. Students that find problem sets difficult are invited to see me during office hours.

Midterm and Final Exam

¹ If time does not permit, this part will focus on the theory of sustainable development without a detailed treatment of the economics of natural resources.

The midterm and final exam are closed-books exams that will test the command of theory and applied problem solving skills. Problems and questions asked will be similar (but not identical) to those used for the problem sets. The final exam is scheduled on Monday, April 30 from 11:30 am to 2:20 pm. A special session of walk-in office hours is held on April 26th from 9 am to 4 pm.

Class materials

Required textbook

Tietenberg, Tom and Lynne Lewis (2015), *Environmental & Natural Resource Economics*, Pearson, 10th edition.

Readings

A list of additional required readings is posted on Canvass.

Complementary textbook

Students that have no or little background in economics may want to refer to:

Varian, H.R. "Intermediate Microeconomics: A Modern Approach" (Any edition)

Etiquette during classes

When you are in class you need to be focused: cellphones must be silenced and not used. Laptops and tablets are allowed to take notes, but it is strictly forbidden to use them for other purposes. Each time a student is caught browsing the internet, emailing or following social media, her/his participation grade will be reduced by 4 credits.

Honor code, disabilities and special arrangements

All assignments, projects and exams are strictly individual. Compliance with the Georgia Tech Academic Honesty Policy and Honor Code will be strictly enforced in the class. The text of the honor code can be found at: <http://www.deanofstudents.gatech.edu/integrity/page.php?acadcode.htm> .

Plagiarism, fundamentally, is representing someone else's work as one's own. Reproducing (even a small piece) of someone else's text exactly, or restating someone's original ideas without attribution is strictly prohibited. It is always appropriate to cite the source or to use a quotation with proper attribution. It is also appropriate to credit any charts, graphs or other graphics (pictures, etc.) if they are not original, including when they have been slightly modified from the original.

There is a zero tolerance policy for any violations of these rules. All violations are reported to the Georgia Tech Office for Academic Misconduct.

If you have a documented disability and wish to discuss academic accommodations, please contact me as soon as possible. Please also let me know if you are an athlete with special requirements.

List of topics

While the order and the content of the lecture can change, the dates in which homework are assigned and due and the dates for the midterm and final exams will not change.

	Date	Lecture number	Topic	HW
T	9-Jan	1	Introduction I	
Th	11-Jan	2	Introduction II	
T	16-Jan	3	Efficiency and markets	
Th	18-Jan	4	Market failure	
T	23-Jan	5	Efficiency and market failures, advanced - I	
Th	25-Jan	6	Efficiency and market failures, advanced - II Cost-benefit analysis and other decision making	
T	30-Jan	7	metrics	HW1 Assigned
Th	1-Feb	8	Discounting	
T	6-Feb	9	Economics of pollution control	
Th	8-Feb	10	Advanced topics: uncertainty Advanced topics: revenues from pollution	
T	13-Feb	11	charges Advanced topics: spatially differentiated	HW1 Due - HW2 Assigned
Th	15-Feb	12	damages	
T	20-Feb	13	Advanced topics: volatility in emission trading	
Th	22-Feb	14	Advanced topics: voluntary programs	
T	27-Feb	15	Lessons from policy analysis	HW2 Due - HW3 Assigned
Th	1-Mar	16	Lessons from policy analysis	
T	6-Mar		Midterm	
Th	8-Mar	17	Valuing the environment: revealed preferences I Valuing the environment: revealed preferences	
T	13-Mar	18	II	HW3 Due - HW4 Assigned
Th	15-Mar	19	Valuing the environment: constructed markets	
T	20-Mar		Break	
Th	22-Mar		Break	
T	27-Mar	20	Depletable resource allocation	
Th	29-Mar	21	Water	
T	3-Apr	22	Forests	HW4 Due - HW5 Assigned
Th	5-Apr	23	Common pool resources	
T	10-Apr	24	Ecosystem services Dynamic Efficiency and Sustainable	
Th	12-Apr	25	Development	
T	17-Apr	26	Climate change economics	HW5 Due
Th	19-Apr	27	Climate change economics	
T	24-Apr	28	Climate change economics	
T	2-May		Final exam	