Colgate University
ECON 228: Environmental Economics[†]
Fall 2020 (8/27 - 12/18)

Professor:	Pierce Donovan	pdonovan@colgate.edu
Lectures:	Clark Room,	MWF 8:10 - 9:00 am (A)
	Colgate Hall (JCC)	MWF 9:20 - 10:10 am (B)
Office Hours:	*Remote* via Zoom	TR 1:00 pm - 2:00 pm,
	(see `Moodle` link)	F 12:00 pm - 1:00 pm

Course Description and Objectives

At its core, economics is a discipline focused on allocating scarce resources. And this extends to natural resources, naturally! In fact, we can't really understand how to properly manage the environment *without* economics.

Economics provides a framework for making trade-offs between competing values. Freshwater can be used for irrigation or hydropower, or put in bottles—*or* it can be left alone in its natural state in rivers and aquifers. There are good reasons to allocate water to each "bin." But without a complete understanding of the benefits and costs of each use, we create unnecessary waste.

These trade-offs help identify solutions for natural resource management. In this course we'll learn how others have tuned policy to yield an optimal mix of conservation and commerce.[‡] The aim is to understand how good policy can help protect our resources. We'll discuss issues in fisheries and forestry, oil and natural gas extraction, pollution control, and elsewhere. You'll learn about the history of natural resource management and an economic perspective for addressing common environmental problems, and become an informed critic of current environmental policy debates.[††]

Prerequisites (a healthy attitude)[*]

This class is reading and writing-intensive. I encourage you to start assignments early (it will make the course much more enjoyable). I ultimately want you to be able to synthesize information from multiple sources; relying solely on my lectures, or the book, or the readings alone won't help you paint a full picture. I'll be looking for you to pull it all together.

Class time will consist of lectures and discussions of the readings. I'll provide slides for each lecture, but I bet writing notes in your own words will be more helpful for future you. Regarding discussion, it is important for you to have read the readings assigned before each class.

[†] As the semester goes on, I may change the contents of this syllabus regarding the schedule, grading, or other details.

[‡] And to a lesser extent, all of the political and moral caveats that push us away from this ideal.

[††] This course lays foundation for ECON 383: *Natural Resource Economics*—which extends what you'll learn here with rigorous mathematical modeling. After 228, you may appreciate the more detailed perspective that models can provide.

[*] Oh, and ECON 151: *Introduction to Economics*. Please take that course first.

Course Website

I'll be using `Moodle` to upload any resources (slides, readings, assignments, grades, etc.) we will be using throughout the course, and you'll submit assignments here. A "collective annotator"—`hypothes.is`—will be accessed here as well. This tool allows us to come up with ideas for in-class discussions as you read and make notes on the assigned readings before each class. Your involvement here will give you credit toward your participation grade. This may be a good alternative for those who don't like speaking up at 8am. I'm trying this out for the first time, but I think it will be an engaging way to do the readings before class. This will be your opportunity to shape discussion!

Textbook and Readings

Most of my lecture material will follow the direction of this book:

Markets and the Environment, Second Edition, 2016
- By Nathaniel O. Keohane and Sheila M. Olmstead

The book is required for the course, and it's a nice gift if you want to share it with a curious family member afterward. Additionally, discussions and assignments will require readings from other sources. I will upload/link those to the course page as we progress. Take a look at the appropriate book readings *before* each lecture; the best way to follow along in class is to understand where we're heading in advance. For the reading schedule, see the course outline.

Term Paper

The term paper is meant to be a deeper exploration into a related question of your own interest. We'll build up to the final product in stages. As the course continues, I'll add details regarding the paper. Each step of the way will bring in new questions for you to tackle, specific to your case study. The goal of this assignment is to really understand the logic of the economist and ride it from "environmental problem" to "policy solution."

1. Find a particular environmental issue and setting of interest and write a summary of the issue. Why is it important? Who/what is involved? Start collecting some credible sources.

2. Peer review each other's ideas. Share some potential directions for others to take their papers or relevant sources you've come across.

3. Discuss the nature of the issue using what you've learned (so far) about environmental economics. Is there a behavioral problem? An issue with institutions/market failure? A lack of research or incomplete policy? What policy solutions might be available?

4. Present your early draft in class. It's important to talk about unfinished work; expressing your thoughts to a captive audience is crucial for testing out ideas and finding future direction.

5. Bring the full report together and reflect on your analysis. How have your thoughts regarding environmental management changed since taking this course?

Module Assignments

There are four assignments due throughout the course, each due before lecture every other Monday earlier in the course. I will upload each assignment two weeks in advance so you can plan ahead. Submissions will be graded within a week. I encourage you to discuss the assignments together, although you must submit your own work. Late homework will be accepted for three days, with a 10% penalty per day. I don't plan to drop any assignments.

Final Exam

I think exams are supposed to be learning experiences, not just a place to regurgitate material. The final "exam" will be a simplified version of the term paper, but on a topic [from a pool] of my choosing. I will set you up with a good amount of background material to research and write a short essay similar to your early writing assignments. The final will come out a week before our exam date, although I do not want you to spend a full week on this.

Grading

I don't *give* grades, you *earn* them. Further, I don't judge your performance relative to your peers (i.e. curve your grades) during the term in order for you to have the clearest signal about your performance. I look for a proven understanding of the material via the following:

35%	Term Paper (broken into several parts)
40%	Module Assignments (x4)
10%	Final Exam
15%	Class Participation

Grading written work can sometimes feel subjective, so I'll formalize what I'm looking for here:

A (90) You've demonstrated a strong understanding or interest in the subject at hand. Your answers provide an interesting/personal/insightful/detailed take beyond simply regurgitating material. I reserve an A^+ (100) for truly exemplary or passionate work.

B (80) You've connected the dots and answered my questions satisfactorily. Information from lectures, the text, and readings were brought together to build a clear and coherent response.

C (70) You've missed a bit of low-hanging fruit. Some of your responses didn't quite "get there," and some crucial/expected elements of a correct answer were missing.

D (50) You didn't demonstrate a complete understanding of the material. There were erroneous/unsupported statements or incomplete answers in your work.

F (0) You either didn't submit anything, or you *did* but that work didn't address the questions at hand or included plagiarized work.

Covid-specific Things

- Our last lecture/discussion will be just before the Thanksgiving break. During the first week of December, I will meet with each of you individually to discuss your term papers—which are due the following week.
- Missing lecture isn't the end of the world. If you feel sick, please do not come to class. I don't need an excuse, but please be in touch if you will be out for multiple days.
- Lectures will not be streamed/recorded (except for the first two weeks). For those who are remote or those who end up momentarily remote due to quarantine, I plan to use the first 20 minutes or so of office hours to recap lectures and discussion.
- In the case that we all have to return home before Thanksgiving, I will record lectures asynchronously and find a viable time for discussion via Zoom.

Conduct

These are just a few more things to keep in mind that I put in all my syllabi:

- When asking for help outside of class, please be able to show how you have approached your problem. Simply asking for an answer is not a productive use of our time. I hope to facilitate critical thinking, and that takes effort on everyone's part.
- While I'll be accessible by email, I strongly prefer communicating during class/office hours. Regarding boundaries, I do not plan on answering emails late at night or on Sundays.
- I will not tolerate academic dishonesty. Colgate University's Academic Honor Code (`here`) requires instructors to report any suspected cheating, plagiarism, or other misconduct.
- You do not have permission to publish my course materials (online or otherwise). I don't want to see my work hosted somewhere like `CourseHero` (see the Academic Honor Code above).
- Please be respectful to your classmates. Refrain from talking during class if it is not relevant to lecture or discussion. Cell phone or tablet use should not detract from your ability to follow along with class. No activity on your part should undermine the efforts of other students.
- If you have any problems with this course or any other matters that may affect your work in this course, or you simply need someone to talk to, please contact me sooner rather than later. If you have a learning disability or a physical disability that requires accommodation, please let me know as soon as possible.
- Colgate University is a diverse community of individuals with many perspectives and identities. In order to create an inclusive and intellectually vibrant community, we must understand individual differences and common ground. Colgate University's report on Academic Freedom and Freedom of Expression (`here`) reflects the ideals I seek to uphold in this class.

Course Outline

Foundations for Environmental Economics

The role of economics in environmental management ..... Monday, 8/31

K&O: Chapter 1, pp. 9-10
Reading: *An economic perspective on environmental and resource management*, Oates
Concepts: stewardship, constraints, scarcity, trade-offs

Economic efficiency and environmental policy ..... Wednesday, 9/2

K&O: Chapter 2
Concepts: maximizing net benefits, equi-marginal rule

The benefits and costs of environmental protection ..... Friday, 9/4

K&O: Chapter 3, pp. 35-55
Concepts: willingness-to-pay, revealed and stated preference methods, contingent valuation, hedonics, travel-cost methods, shadow values

Critiques of benefit-cost analysis ..... Monday, 9/7

K&O: Chapter 3, pp. 55-68
Reading: *The value of a statistical life and coronavirus, with Alan Krupnick*, Raimi
Concepts: inputs to policy, efficiency vs equity, discounting, uncertainty, VSL

Externalities ..... Wednesday, 9/9

K&O: Chapter 4, pp. 69-79, Chapter 5, pp. 80-85
Reading: *Pay as you slow*, Parry and Safirova
Reading: *New York City steps up*, McConnell and Krupnick
Concepts: complete market, unintended/uncompensated side-effects, market failure

Public goods ..... Friday, 9/11

K&O: Chapter 5, pp. 85-91
Reading: *Shifting sands: Using taxes to build the best beaches, with Megan Mullin*, Raimi
Concepts: rivalry and excludability, free-riding, amenity value, special taxing districts

The tragedy of the commons ..... Monday, 9/14

K&O: Chapter 5, pp. 91-98
Reading: *Barbed wire entrepreneurship*, PERC
Reading: *Are unauthorized foreign vessels deterred from fishing inside EEZs?*, Englander
Concepts: institutions matter, property rights, Coase theorem
Homework #1 due.

Non-Renewables and Energy

What is land worth? ..... Wednesday, 9/16

Reading: *L.A. country club pays ultra low property tax rate*, Romero
Reading: *We should raise taxes on these 3 things to pay for healthcare and parks*, Aron (just #1)
Concepts: scarcity, rents, land use, opportunity cost, asset value

Optimal private extraction of a resource ..... Friday, 9/18

K&O: Chapter 6
Concepts: dynamic efficiency, intertemporal arbitrage, marginal user cost, Hotelling rule

Unregulated, competitive extraction ..... Monday, 9/21

Reading: *Groundwater Markets*, Kuwayama
Reading: *The economic impacts of agricultural groundwater markets*, Bruno
Concepts: market power, non-excludability, protection/stability

Electricity ..... Wednesday, 9/23

Reading: *The next energy battle*, Penn
Reading: *Subsidies for EVs*, McConnell and Linn
Concepts: utilities, energy generation, energy efficiency

Pollution ..... Friday, 9/25

K&O: Chapter 10, pp. 200-207, 208-210, 217-220
Reading: *Learning from thirty years of cap and trade*, Schmalensee and Stavins
Reading: *Pollution is killing Black Americans*, Villarosa
Concepts: cost-effective emissions reduction, distributional impacts

Renewables

A little bioeconomics ..... Monday, 9/28

K&O: Chapter 7, pp. 128-138
Concepts: fisheries, open-access, logistic model, carrying capacity, steady-state
Homework #2 due.

Regulated open-access fisheries ..... Wednesday, 9/30

Reading: *The texture of rents*, Wilen, pp. 1-12
Concepts: rent-dissipation, derbies, over-capitalization

Individual fishing quotas ..... Friday, 10/2

K&O: Chapter 10, pp. 207-214
Reading: *The texture of rents*, Wilen, pp. 12-29
Reading: *A famed fishing port shudders as its Codfather goes to jail*, Bidgood
Concepts: IFQ/ITQs, wealth creation, cost-minimzation, new market generation

Introduction to forestry ..... Monday, 10/5

K&O: Chapter 7, pp. 114-118
Concepts: quasi-renewable, mean/current annual increment, Wicksell rotation

Optimal forest rotation ..... Wednesday, 10/7

K&O: Chapter 7, pp. 118-122
Reading: *Thousands of Southerners planted trees for retirement. It didn't work.*, Dezember
Concepts: Faustmann rotation, site value, dynamic efficiency

Non-timber values ..... Friday, 10/9

K&O: Chapter 7, pp. 122-128
Reading: *Forest 'sinks' as a tool for climate-change policymaking*, Sedjo
Concepts: ecosystem management, carbon sequestration, foraging

Conservation

Endangered species protection ..... Monday, 10/12

K&O: Chapter 10, pp. 224-229
Reading: *Carving out some space*, Boyd, Caballero, and Simpson
Concepts: the ESA, tradable development rights, mitigation/conservation banking
Homework #3 due.

Ecosystem services ..... Wednesday, 10/14

Reading: *Cost-effective conservation*, Ferraro and Simpson
Reading: *Green growth that works: Discussing ecosystem services, with Lisa Mandle*, Raimi
Concepts: natural capital, green infrastructure, non-market valuation

The effects of invasive species ..... Friday, 10/16

Reading: *Can genetic engineering bring back the American Chestnut?*, Popkin
Concepts: natural experiments, international trade, blights, "pest control"

Western water ..... Monday, 10/19

Reading: *Cadillac Desert*, Marc Reisner (read this over Winter break instead)
Concepts: CA water management, settlement, irrigation, theft

Term Paper Idea Spitballing

Brainstorming Session I ..... Wednesday, 10/21

Brainstorming Session II ..... Friday, 10/23

Environmental Perspectives in 2020

Principles of market-based solutions ..... Monday, 10/26

K&O: Chapter 8
Concepts: deadweight loss, Pigou, marginal damage, prices vs quantities
Term paper idea due.

What about command and control policies? ..... Wednesday, 10/28

K&O: Chapter 9
Reading: *Economic incentives versus command and control*, Harrington and Morgenstern
Concepts: cost-effectiveness, flexibility, external validity

Environmental federalism ..... Friday, 10/30

Reading: *Environmental federalism*, Schwab
Reading: *The arsenic rule*, Oates
Reading: *State innovation for environmental improvements*, Harrington, Palmer, and Walls
Concepts: national standards, decentralized governance, policy experiments

Integrated assessment modeling ..... Monday, 11/2

Reading: *The strategic costs of carbon emissions*, Wichman
Reading: *The new social cost of carbon*, Auffhammer
Reading: *How much climate change is too much*, Shogren and Taman
Concepts: intergenerational utility, social damage, social cost of carbon
Homework #4 due.

Environmental justice, Dr. April Karen Baptiste ..... Wednesday, 11/4

Reading: *TBA*, TBA

My dissertation: Viability objectives ..... Friday, 11/6

Concepts: ongoing species protection, pricing bycatch, valuing tipping points

The Green New Deal—from an economics perspective ..... Monday, 11/9

Reading: *H. RES. 109*, Cortez et al.
Reading: *Economics in the Age of Environmental Policy, with Robert Stavins*, Raimi
Concepts: climate change, social justice, power generation, sustainability
Term paper peer review due.

Trump and deregulation ..... Wednesday, 11/11

Reading: *The political economy of environmental regulation*, Goodstein and Polasky
Concepts: development of regulations, "over-regulation," roll-backs, regulatory capture

TBD [by the class] ..... Friday, 11/13

Term Paper "Egg Timers"

Presentations I ..... Monday, 11/16

Presentations II ..... Wednesday, 11/18

Presentations III ..... Friday, 11/20

`Initiate Thanksgiving Break.`
Term paper draft due.

December

Week of one-on-one Zoom meetings ..... Monday, 11/30

Term paper due, final exam uploaded ..... Friday, 12/11

Final exam due ..... Friday, 12/18

K&O: Chapter 12