

## Basic Class Info

### Economics of Sustainability and the Environment

**Class location:** TBA

**Instructor:** Bill Shobe

**Email:** shobe@virginia.edu

**Phone:** 434.982.5376 (business hours only, please)

**Office hours:** M-W, 2 pm - 3:30 pm; Monroe 219.

**Other times:** By appointment Tuesdays and Thursdays at my office, Room 219, 2400 Old Ivy Rd. (A map is [here](#).)

### Grad TAs:

- TBA
- TBA

**Undergrad TA:** TBA

### Course objectives

The core theme of this class viewing environmental problems and unsustainability as a failures of ownership and control. The class will explore how environmental problems arise in an exchange economy when standard (but often little discussed) assumptions about the ownership and control of endowments are violated. We will explore when contracting over rights can be expected to correct these problems and when it may not be expected to do so. We examine mechanisms for correcting misallocations of resources that arise due to the failure of actual ownership and control to match the assumptions in the classic micro model. This will include examination of regulations, taxes, subsidies, and trading regimes. In the second half of the class, we study the allocation of renewable and non-renewable natural resources over time. We give special attention to how capital markets allocate resources across time and when we may or may not expect this intertemporal allocation to be satisfactory. Finally, we will bring all of the elements together in a discussion of global warming and of global sustainability more generally.

### Readings and Materials

*Environmental Economics: An Introduction* (recent edition); Barry Field and Martha Field; McGraw Hill.

*Pollution & Property: Comparing Ownership Institutions for Environmental Protection*, Daniel Cole; Cambridge, 2002.

Readings: there will be additional readings for each class posted on the class activities page.

Also, you will need to obtain a TopHat account. (More information follows.)

## **Classroom response system**

I will be using the TopHat classroom response system. You will use your phone to respond to queries in class. This will, I hope, add a little spice to the class. It will also help me understand which ideas students in the class find most challenging. Your responses to these TopHat queries will constitute a small part of your grade for the class. No single response will carry much weight, but, in aggregate, it can make a difference.

## **Piazza**

We will use Piazza for communications related to class. Both substantive and routine administrative questions should be posted to Piazza. (Issues that are personal in nature do not need to be posted, of course.) This ensures that everyone sees the responses to questions. I hope that you will take the opportunity to respond to questions that your classmates raise on Piazza. I will certainly notice and appreciate it, if you do. As a rule, you should not expect that I will respond to Piazza posts on weekends, so it will be important for you to help each other out.

## **Prerequisites**

I will assume that you know *or can learn as needed* the core ideas from introductory microeconomics texts. I will expect you to be able to use many key ideas from intro microeconomics in this class. This class does not explicitly use calculus, but important ideas from calculus are used throughout the term. In the past, non-economics majors have been able to hold their own in this class as long as they are willing to learn some microeconomic principles as we move through the material.

## **Honor Policy**

Our honor contract: You have the responsibility of submitting only your own work as your own, and I have the responsibility of trusting you when you pledge your work. All written work handed in to me under your name is considered to be pledged, but please pledge it explicitly anyway. And please pledge any documentation that you provide for special arrangements on graded work. As a matter of course, I check randomly chosen assignments for plagiarism using standard, online services.

## **Special Accommodations**

If you need special accommodations for any class requirements, you must contact me as soon as you reasonably can. Serious illness or death within the student's close community, religious holidays, and participation in field trips and athletic contests are all permissible reasons for rescheduling an in-class test. You have the obligation ahead of time to make the necessary arrangements for make-ups. Your reasons must be in writing (which includes email) and should be pledged. Otherwise, no make-ups will be allowed.

A special word about the final exam. The final exam will be on December 9 from 2 to 5 PM. I will **not** allow students to reschedule the final for the purposes of arranging convenient holiday travel. Period. If you need to arrange your holiday travel in a way that conflicts with

the final, then you need choose a class that does not disrupt your holiday plans.

### Course Format

There will be two classes per week: Mondays and Wednesdays at 5:00 PM in Wilson 402. Class attendance is not required, but part of your grade will depend on answers to TopHat questions that will only be available during class. Fair warning: in the past, those who did not attend class regularly tended to do poorly in the course.

Discussion sections will meet regularly and are required. **One of the discussion sections will be used for a test, so you must make sure that this date (week of Sept. 30) is clear for you to attend your assigned discussion section.**

### Electronics

I request that you refrain from using cell phone, laptops, or tablet computers during class *except in response to TopHat queries*. It is just too much of a distraction for all concerned.

### Office Hours

I will often be available by appointment on Tuesdays or Thursdays, when I will be in my office at the Weldon Cooper Center, which is at 2400 Old Ivy Rd., a 15 minute walk from Central Grounds. (A map is [here](#). Parking is available.)

### Grading

I *expect* the average and median grades for this class will be around 86 or so. Letter grades for the course will be assigned as follows:

A+	98+
A	94+
A-	90+
B+	88+
B	84+
B-	80+
C+	78+
C	74+
C-	70+
D	60+
F	Otherwise

TopHat responses will count for 10% of the total grade.

There will be one graded homework assignment for 5%, two mid-term tests (one during a discussion section and one during class time), and a final exam. Each of the mid-terms (dates: during discussion sections, week of Sept. 30, regular class time, Nov. 6) will count for 25% of your grade, and the final will count for 35%. **The final exam (Dec. 9) will be fully comprehensive.**

**DRAFT - Course Description (for SIS)**

# Activities

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## Tentative Schedule of Topics & Activities

Class	Topics	Activities
1 (8/28)	Resources, exchange, and the social optimum: where we review microeconomics in a way that will prove useful.	<p><b>Reading:</b> F&amp;F, Chs 1 and 2</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p>
2 (9/2)	Property rights and markets	<p><b>Reading:</b> F&amp;F, Ch. 3 Bergstrom and Randall, Rules of the Game Dales, The Property Interface</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b> Problem Set #1</p>
3 (9/4)	"Externalities", public goods, and common property	<p><b>Reading:</b> F&amp;F, Ch. 4  Hardin, The Tragedy of the Commons</p> <p>Listen to Bret Weinstein's talk: <a href="#">The Personal Responsibility Vortex</a></p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
4	Bargaining and opportunity cost; Ronald Coase, who was here at UVA when he	<p><b>Reading:</b> <a href="#">Coase, The Problem of Social Cost</a></p>

<b>(9/9 &amp; 9/11)</b>	wrote this article, won the Nobel Prize. This article takes you to the foundations of microeconomic analysis. It is a difficult article. <b>Read it carefully. Read it more than once.</b> [It is OK to skip section VII.]	<p>Cooter &amp; Ulen, An Economic Theory of Property</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b> Problem Set #2</p> <p><b>Assessment:</b></p>
<b>5 (9/16)</b>	- ditto -	<p><b>Reading:</b> Cole, Pollution &amp; Property, Ch. 1 &amp; 2</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b> Problem Set #3</p> <p><b>Assessment:</b></p>
<b>6 (9/18)</b>	Controlling pollution: Introduction	<p><b>Reading:</b> F&amp;F, Ch. 5, 9, 10</p> <p>Ruff, The Economic Common Sense of Pollution</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
<b>8 (9/23)</b>	Incentives: Pigouvian taxes, subsidies for emission reduction, and other incentives	<p><b>Reading:</b> F&amp;F, Ch. 11, 12</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
<b>9 (9/25)</b>	Tradable emission allowances	<p><b>Reading:</b> F&amp;F, Ch. 13</p> <p>Schmalensee and Stavins, Lessons Learned from Three Decades of Experience with Cap and Trade</p> <p>Murray and Maniloff, Why have greenhouse emissions in RGGI states declined?</p>

		<p><b>Discussion:</b></p> <p><b>Assignment:</b> Graded homework assignment due 9/25.</p> <p><b>Assessment:</b></p>
<p><b>10</b> <b>(9/30 &amp; 10/2)</b></p>	<p>More on pollution control instruments</p>	<p><b>Reading:</b> CBO, Managing Allowance Prices in a Cap and Trade Program</p> <p>Optional: Perman et al., Ch. 6, all</p> <p>You may skip the text in section 6.5 of Perman.</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment: Test #1: In discussion sections during the week of 9/30</b></p>
<p><b>11</b> <b>(10/9 &amp; 10/14)</b></p>	<p>Environmental Federalism</p>	<p><b>Reading:</b></p> <p>Oates, A Reconsideration of Environmental Federalism</p> <p>Banzhaf, Ma &amp; Timmins, Environmental Justice: The Economics of Race, Place, and Pollution</p> <p>Shobe &amp; Burtraw, Rethinking Environmental Federalism in a Warming World</p> <p>Cole, Ch. 3</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
<p><b>12</b></p>		<p><b>Reading:</b> Harris, Chapter 12</p>

10/16	Intro to the economics of natural resources	<b>Discussion:</b> <b>Assignment:</b> <b>Assessment:</b>
13 (10/21 & 10/23)	Non-renewable natural resources	<b>Reading:</b> Hanley, Shogren & White - Chapter 13  Stiglitz, A Neoclassical Analysis of the Economics of the Economics of Exhaustible Resources  Solow, The Economics of Resources or the Resources of Economics  <b>Discussion:</b> <b>Assignment:</b> <b>Assessment:</b>
14 (10/28 - 11/4)	Renewable resources - fisheries, forests, water, biodiversity, etc.	<b>Reading:</b> Field, 12, 13, 15, 19 ( on Collab)  Maybe: Turner & Pearce, Ch. 6  <b>Discussion:</b> <b>Assignment:</b> <b>Assessment:</b>
15 (11/6)	In class test	<b>Reading:</b> <b>Discussion:</b> <b>Assignment:</b> <b>Assessment:</b> -- Second Test: In class on Wednesday, 11/6 --
16 (11/11 - 11/18)	Sustainability	<b>Reading:</b> Goodstein ch 6 and ch 7  Solow, Sustainability: An economist's perspective  <b>Discussion:</b>



		<b>Assignment:</b>
<p><b>17</b></p> <p><b>(11/20)</b></p>	<p>More on sustainability</p>	<p><b>Reading:</b></p> <p>Bergstrom and Randall ch 19</p> <p>Cole, Ch. 6 and 7</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
<p><b>18</b></p> <p><b>(11/25 &amp; 12/2)</b></p>	<p>Global Warming: Where everything we have learned comes together, and how!</p>	<p><b>Reading:</b> CBO Primer on the Economics of Climate Change</p> <p>National Climate Assessment - Overview (there is also a summary PowerPoint deck)</p> <p>For background, you might read:</p> <p>Understanding and Responding to Climate Change, National Academies of Science</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b></p> <p><b>Assessment:</b></p>
<p><b>19</b></p> <p><b>12/4</b></p>	<p>Wrapping up</p> <p>-- Final exam: Dec. 9, 2 pm - 5 pm --</p> <p>Wilson 102</p>	<p><b>Reading:</b> Cole, Ch. 4</p> <p><b>Discussion:</b></p> <p><b>Assignment:</b> Review everything!</p> <p><b>Assessment:</b></p>

WILSON 402

The exam is comprehensive.

