

Spring 2017

Dr. Kohlhasse  
University of Houston

**ECON 3363, Section 20443**  
**ENVIRONMENTAL ECONOMICS**  
(class meets MW 1:00-2:30pm in AH 9)

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hours: MW 3:00-4:00pm, and by appointment  
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**TA:** Yilin Dong, office 234 McElhinney, meetings by appointment  
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**CLASS:** The course is designed to teach students how to think about environmental issues using the framework of economics, especially microeconomics tools. We start with an analysis of market failures and externalities. Next we discuss potential policy approaches to environmental problems such as regulations, taxes, subsidies and marketable permits. We study methods to measure benefits and costs of environmental improvements. Then we apply these concepts to several applications including regional and local air quality, global climate change, and water quality.

**LEARNING OUTCOMES:**

- Students will be able to use economic terminology and models of environmental issues appropriately and correctly.
- Students will be able to analyze and interpret quantitative data about the environment.
- Students will be able to organize and present material in a systematic framework based on environmental economic models.

**REQUIRED TEXT:**

Scott J. Callan and Janet M. Thomas, Environmental Economics and Management, 6<sup>th</sup> ed., Southwestern Cengage Learning, 2013, ISBN13: 978-1-111-82667-3. (Buy only the 6<sup>th</sup> edition.)  
digital rentals and e chapters are available at  
<http://www.cengagebrain.com/shop/search/9781111826673>

**PREREQUISITES:** The basic requirement is that you have taken an introductory microeconomics course at the college level or that you get permission from me. A course in intermediate microeconomics is highly recommended, but not absolutely necessary.

**COURSE EVALUATION:** 20% Midterm 1 (Wednesday Feb. 15, 2017, in class)  
20% Midterm 2 (Wed. March 28, 2017, in class)  
45% Final (Friday May 5, 2017, 2-5pm, regular classroom)  
15% homework sets and experiments

There are three exams: two midterms and a final. The final exam is comprehensive. Exams consist of short problems with discussion. The homework sets ask you to solve problems relating to the economics of environmental issues. You may do homeworks in groups of one or two. We may do one or more in-class experiments. Attendance is required for the experimental sessions.

**COURSE POLICY:** All assignments are required and must be completed and handed in on time. Original hardcopies of homeworks are required; I do NOT accept electronic submissions of homeworks. Participation in experiments is required. **NO MAKEUP EXAMS!** Any absence from an exam or quiz for medical reasons must be documented by your physician. Any other absence from an exam must be approved by me *in advance* in writing. Unapproved absence from any exam counts as a zero. **All exams, homeworks and research memo are covered by the Honesty code of UH** <http://publications.uh.edu/content.php?catoid=8&navoid=1352>

<u>TOPIC</u>	<u>TEXT/READING</u>
I. <i>Introduction: What is Environmental Economics?</i>	ch.1
II. <i>Modeling Environmental Problems</i>	
A. Review of Market Models	ch. 2
B. Market Failures	ch. 3
III. <i>Modeling Solutions to Environmental Problems</i>	
A. Conventional Solutions: Command and Control Strategies	ch. 4
B. Economic Solutions: the Market Approach	ch. 5, ch. 12 (part) Schmalensee & Stavins (2013)*
IV. <i>Analytic Tools for Environmental Planning</i>	
A. Environmental Risk Analysis	ch. 6
B. Assessing Benefits Houston issues	ch. 7, Carson (2012)* Kohlhase handout
C. Assessing Costs	ch. 8
D. Benefit-Cost Analysis in Environmental Decision Making	ch. 9
V. <i>Air Quality</i>	
A. Defining Air Quality Standards Houston issues	ch. 10 Levin & Shelly (2015)* Forswall & Higgins(2005)*
B. Mobile Sources	ch. 11
C. Stationary Sources	ch. 12

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D. Global Issues	ch. 13
i. Ozone Depletion	
ii. Climate Change	
Primer on Climate Change	CBO (2003)*, Stern (2007)*
Economic Effects of Climate Change	Tol (2009)*,
IPCC Assessment Reports	IPCC (2007)*, IPCC (2013)*
iii. Treaties and Regulations	UNFCCC (2008)*
	UNFCCC (2015)*
VI. Water Quality	parts of chs. 14, 15

**\*OTHER READINGS** listed below and available either online or via Blackboard. (additional articles may be added during the course)

Richard T. Carson, 2012. "Contingent Valuation: A Practical Alternative When Prices Aren't Available." *Journal of Economic Perspectives*, 26(4): 27-42.

CBO (Congressional Budget Office), "The Economics of Climate Change: A Primer," April 2003, available to download at  
<http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/41xx/doc4171/04-25-climatechange.pdf>

Clayton D. Forswall and Kathryn E. Higgins, "Clean Air Act Implementation in Houston: An Historical Perspective 1970-2005," Feb. 2005 report, Shell Center for Sustainability, Environmental and Energy Systems Institute,. Available to download at:  
[http://shellcenter.rice.edu/uploadedFiles/Shell\\_Center/Reports\\_and\\_Publications/SIP\\_2.pdf](http://shellcenter.rice.edu/uploadedFiles/Shell_Center/Reports_and_Publications/SIP_2.pdf)

IPCC (Intergovernmental Panel on Climate Change), "Climate Change 2007: Synthesis Report Summary for Policy Makers," 2007, available to download from  
[http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)

IPCC (Intergovernmental Panel on Climate Change), "Climate Change 2013: Physical Science Basis, Technical Summary," 2013 available to download from  
[https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5\\_TS\\_FINAL.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_TS_FINAL.pdf)

Ilan Levin and Adrian Shelley, "Houston Smog Levels Up in 2015," *Environmental Integrity Project News*, Dec. 18, 2015, available to download from  
<https://www.environmentalintegrity.org/news/houston-smog-levels-up-in-2015/>

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Richard Schmalensee and Robert Stavins., "The SO2 Allowance Trading System: The Ironic History of a Grand Policy Experiment" *Journal of Economic Perspectives*, vol. 27(1), Winter 2013, pp. 103-122.

Nicholas Stern, *The Economics of Climate Change: The Stern Review*," published for the Treasury of the United Kingdom, 2007, by Cambridge University Press, draft version available to download from  
[http://webarchive.nationalarchives.gov.uk/20100407172811/http://www.hm-treasury.gov.uk/stern\\_review\\_report.htm](http://webarchive.nationalarchives.gov.uk/20100407172811/http://www.hm-treasury.gov.uk/stern_review_report.htm)

Richard S. J. Tol, 2009, "The Economic Effects of Climate Change." *Journal of Economic Perspectives*, 23(2): 29-51.

UNFCCC (United Nations Framework Convention on Climate Change), *Kyoto Protocol Reference Manual*, 2008 available to download from  
[https://unfccc.int/resource/docs/publications/08\\_unfccc\\_kp\\_ref\\_manual.pdf](https://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf)

UNFCCC (United Nations Framework Convention on Climate Change), "Adoption of the Paris Agreement," 2015, available to download from  
<https://unfccc.int/resource/docs/2015/cop21/eng/109r01.pdf>

## **SELECTED INTERNET SITES -- ENVIRONMENTAL ISSUES**

### **Government Agency Sites**

<http://www.epa.gov/>

Operated by the U.S. Environmental Agency. Extensive data on all aspects of U.S. environmental issues. If you append "region6" to the address you will reach the EPA's Region 6, which includes Texas.

<https://www3.epa.gov/enviro/myenviro/>

Operated by the USEPA, MyEnvironment provides access to a cross-section of environmental data for any geographical location in the U.S.

<https://www.tceq.texas.gov/>

Operated by the Texas Commission on Environmental Quality (before 9/02 known as Texas Natural Resource Conservation Commission, TNRCC). Data on Texas pollution problems. Contains Houston's Clean Air Plans (also called Houston's State Implementation Plans).

<http://www.greenhoustontx.gov/reports.html>

Operated by the City of Houston, "Green Houston" contains several reports on local environmental issues.

### **Environmental Activist Sites that contain some useful data**

<http://www.rtknet.org>

Operated by the Unison Institute & OMB-Watch. The Right-to-Know network (established in 1989 under the Community Right to Know Act). has various data bases, including the Toxics Release Inventory (TRI), and provides links to other environmental web sites.

<http://www.scorecard.org>

Founded by the Environmental Defense Fund and now operated by Netcentric Campaigns. Has U.S. data by county; covers water, air, & land pollution. Can request community reports by simply entering a zip code.

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<http://www.cechouston.org>

Operated by the Citizen's Environmental Coalition of Houston (CEC). The CEC has over 120 members and includes environmental nonprofits, government agencies & elected officials from the Houston-Galveston area. Directory includes profiles of members.

<http://airalliancehouston.org/>

Air Alliance Houston is the result of a merger between the Galveston-Houston Association for Smog Prevention (GHASP) and Mothers for Clean Air. Excellent coverage of local air issues.

<http://houstoncleanairnetwork.com/>

Houston Clean Air Network is a collaboration between UH researchers, local non-profits, businesses, and government agencies. Supports the mobile app, **OzoneMap**, which shows current ozone patterns in the Houston area.

### **Business-Sponsored Site that contains some useful data**

<http://houstonairquality.com/>

On Air: Houston is an initiative of the Greater Houston Partnership, the local Chamber of Commerce. Contains reports about the Houston area's progress in meeting US air quality standards for 6 "criteria" air pollutants.

### **Environmental Blogs by Economics Professors**

<http://www.env-econ.net/>

An environmental economics blog written by Professors John Whitehead (Ohio State University) and Tim Habib (Appalachian State University).

<http://greeneconomics.blogspot.com/>

Environmental and Urban Economics blog written by Prof. Matt Kahn of USC.

<http://www.robertstavinsblog.org/>

Environmental economics blog written by Prof. Robert Stavins of Harvard University Kennedy School.