

Fall 2019

Dr. Kohlhasse  
University of Houston

**ECON 3363, Section 25357**  
**ENVIRONMENTAL ECONOMICS (class meets TTh 4:00-5:30pm in M122)**

**OFFICE:** 201B McElhinney, 713-743-3799; email: jkohlhasse@uh.edu  
**hours:** TTh 3-4pm, and by appointment  
**my web page:** <http://www.uh.edu/~kohlhasse/>  
**Blackboard Learn:** <http://www.uh.edu/blackboard> (password access)

**TA's:** Two TA's will share this course sequentially-- Gael Compta and Oscar Galvez. Both are 2<sup>nd</sup> year Ph.D. students in economics and have their offices in 203A McElhinney, emails gcompta@uh.edu & ogalvez-soriano@uh.edu, office hours by appointment.

**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 and global climate change.

**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 economics 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 (Tues. Sept. 24, 2019 in class)  
20% Midterm 2 (Tues. Oct. 29, 2019 in class)  
45% Final (Tues. Dec. 5, 2019, 2-5pm, regular classroom)  
15% Homework sets (3-4 assigned during term)

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 to two*. We may do one or more in-class experiments. Attendance is required for the experimental sessions.

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**COURSE POLICIES:** 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. <http://publications.uh.edu/content.php?catoid=8&navoid=1352>

**Classroom Conduct:** I expect you to attend all classes and actively engage in the discussions. I also expect you to arrive on time. Please turn off your mobile devices during class.

**Academic Honesty:** To cultivate an environment of academic integrity, the University of Houston expects students to abide by the University's Undergraduate Academic Honesty Policy, found in the Undergraduate Catalog. <http://www.uh.edu/academic-honesty-undergraduate>. **All exams and homeworks are covered by the UH Honesty policy.**

**Student Conduct Policy:** CLASS students are expected to abide by the University of Houston's Code of Student Conduct: (<http://www.uh.edu/dos/behavior-conduct/student-code-of-conduct/>)

**Counseling and Psychological Services:** Counseling and Psychological Services (CAPS) -- [www.uh.edu/caps](http://www.uh.edu/caps)-- are available for students having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS by calling 713-743-5454 during and after business hours for routine appointments or if you or somebody you know is in crisis. The "Let's Talk" program provides a drop-in consultation service at convenient locations and hours around campus. [http://www.uh.edu/caps/outreach/lets\\_talk.html](http://www.uh.edu/caps/outreach/lets_talk.html)

**Students with Disabilities:** The College of Liberal Arts and Social Sciences, in accordance with 504/ADA guidelines, is committed to providing reasonable academic accommodations to students who request them. Students seeking accommodation must register with the Center for Students with Disabilities (CSD) 713-743-5400 and present approved documentation to me as soon as possible. <http://www.uh.edu/csd/>

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**Note: all readings are required unless marked “optional” with a superscript “T”**

	<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
	Tragedy of the Commons, revisited	Frischmann (2018)
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. Assessing Benefits	ch. 7, Carson (2012)
	Houston issues	Bishop (2017)
	B. Assessing Costs	ch. 8
	C. Benefit-Cost Analysis in Environmental Decision Making	ch. 9
V.	<i>Air Quality</i>	
	A. Defining Air Quality Standards	ch. 10
	Houston issues	Levin & Shelly (2015) <sup>T</sup> Forswall&Higgins (2005) <sup>T</sup>
	B. Mobile Sources	ch. 11
	C. Stationary Sources	ch. 12
	D. Global Issues—Climate Change	ch. 13
	i. Primer on Climate Change	CBO(2005), Stavins (2019) Stern (2007) <sup>T</sup>
	ii. Economic Effects of Climate Change	Tol (2009)
	iii. IPCC Assessment Reports	IPCC (2007) <sup>T</sup> IPCC (2013) <sup>T</sup> IPCC-SR15-summary (2018) NCA-4-overview (2018)
	iv. Treaties and Regulations	UNFCC (2008) <sup>T</sup> UNFCC (2015) <sup>T</sup>

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**REFERENCES FOR READINGS** The following are available either online or via Blackboard. (additional articles may be added during the course)

Richard C. Bishop *et al*, "Putting a Value on Injuries to Natural Assets: the BP Oil Spill, *Science*, 2017, 356(6335):253-254.

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

CBO (Congressional Budget Office), "Limiting Carbon Dioxide Emissions: Prices Versus Caps," March 15, 2005, pp. 1-5, available to download at <https://www.cbo.gov/sites/default/files/109th-congress-2005-2006/reports/03-15-pricevsquantity.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)

Brett Frischmann, "The Tragedy of the Commons, Revisited," *Scientific American, Observations*, November 19, 2018, available at <https://blogs.scientificamerican.com/observations/the-tragedy-of-the-commons-revisited/>; accessed August 19, 2019.

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)

IPCC (Intergovernmental Panel on Climate Change), "Summary for Policymakers," in *Global Warming of 1.5°C*, an IPCC Special Report, 2018, 32pp, available to download from <https://www.ipcc.ch/sr15/>

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/>

National Climate Assessment-IV, "Overview," *In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, Volume II. U.S. Global Change Research

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Program, Washington, DC, USA, 2018, pp. 33–71, available to download from  
<https://nca2018.globalchange.gov/chapter/1/>

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

Robert Stavins, "The Future of US Carbon-Pricing Policies," from his blog *An Economic View of the Environment*, May 30, 2019, available at  
<http://www.robertstavinsblog.org/2019/05/30/the-future-of-u-s-carbon-pricing-policy/>

Richard S. J. Tol, "The Economic Effects of Climate Change." *Journal of Economic Perspectives*, 2009, 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/l09r01.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/>

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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>

Hosted by the Houston Chronicle. 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 Green Media Toolshed. Has U.S. data by county; covers water, air, & land pollution. Can request community reports by simply entering a zip code.

<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.

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**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 Johns Hopkins University.

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

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