Economics 351
Fall 2015
Syllabus

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Environmental Economics

Course Objective: This course will introduce students to the methods economists use to analyze issues related to the environment. We will discuss the positive and normative aspects of environmental economics, techniques that are used to value the environment, and approaches—such as regulation and incentive-based programs—that are used to control pollution. This course is taught with the expectation that students have completed Economics 201.

Office Hours: Office hours will be held in Vollum 227 on Mondays and Wednesdays from 3:15-4:15 and on Thursdays from 4:00-5:00. Students who are unable to come during these times are encouraged to make an appointment.

Text and Required Readings: The principal text for this course is *Environmental Economics* (2nd edition) by Charles D. Kolstad. Students are also responsible for the required readings and for additional readings that will occasionally be announced in class. Students are expected to contribute to class discussions by finding examples of current environmental issues in the business, financial, and general press.

Evaluation: Evaluation will be based on three homework assignments, a midterm and comprehensive final examination, participation in a group project, and class participation. Every student should be prepared to contribute meaningfully to every class session.

Collaboration: All submitted work is expected to reflect your effort on the assignment. You are encouraged to work with classmates, tutors, and the instructor on problem sets. However, when you write the assignment, it must be your work and should be written in words that reflect your understanding of the course material. The Honor Principle and the ethics of proper academic conduct must guide your conduct in this class in all respects. The following section from the Guidebook to Reed College summarizes my expectations:

> *Reed College is a community of scholars. The fundamental ethical principle governing scholarship is that one should never claim or represent as one's own work that which is not one's own. The principle of proper academic conduct requires that all work submitted for academic purposes--including, but not limited to examinations, laboratory reports, essays, term papers, homework exercises, translations, and creative work--be the work of the person who submits it, and that, in the case of work based upon experiment and observation, the experimental results and observations be reported faithfully. The principle thus requires that no one claim authorship to the work of another and that no one falsify or misrepresent empirical data. This principle should be clear to every scholar, although determining its application in particular circumstances will require careful thought and guidance.*[1]

[1] For more information see: http://www.reed.edu/academic/gbook/comm_pol/acad_conduct.html

Citations: Citations should be used when appropriate and should conform to the guidelines in the Citation Guide for Papers and Theses in Economics, which is available on the class Moodle site.

Materials on Reserve: The following texts are on 2-hour reserve; other required readings are available electronically. Readings marked with a * are optional.

Easton, Thomas A. 2007. *Taking Sides: Clashing Views on Controversial Environmental Issues* (12th edition) Guilford, CT: McGraw Hill/Dushkin.

Goldfarb, Theodore D. 2001. *Taking Sides: Clashing Views on Controversial Environmental Issues* (9th edition) Guilford, CT: McGraw Hill/Dushkin.

Kolstad, Charles D. 2011. *Environmental Economics* (2nd edition) New York, New York: Oxford University Press.

Outline and Reading List

I. Introduction

August 31st

Kolstad, Chapter 1 (to page 15).

Lackey, Robert T. 2006. Axioms of Ecological Policy. *Fisheries*. 31 (6): 286-290.

*Sandmo, Agnar. 2015. The Early History of Environmental Economics. *Review of Environmental Economics and Policy* 9 (2) 1-21.

September 2nd: Cost of Environmental Protection

Kolstad, Chapter 1 (page 15 to end).

Pasurka, Carl. 2008. Perspectives on Pollution Abatement and Competitiveness: Theory, Data, and Analyses. *Review of Environmental Economics and Policy* 2(2): 194-218.

Grainger, Corbett A. and Charles D. Kolstad. 2010. Who Pays a Price on Carbon? *Environmental and Resource Economics* 46(3): 359-376.

*Pizer, William A. and Raymond Kopp. 2005. Calculating the Costs of Environmental Regulation. *Handbook of Environmental Economics,* Volume 3, edited by Jeffrey Vincent and Karl-Goran Maler. New York: Elsevier.

September 4th: Positive and Normative Analysis

Kolstad Chapter 2.

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

Tol, Richard S. J. 2014. Correction and Update: The Economic Effects of Climate Change. *Journal of Economic Perspectives* 28 (2) 221-226.

Nordhaus, William. 2007. Critical Assumptions in the Stern Review on Climate Change. *Science* 317 (July 13): 201-202.

*Fisher, Anthony C. and Phu V. Le. 2014. Climate Policy: Science, Economics, and Extremes. *Review of Environmental Economics and Policy* 8(2): 307-327.

*Pindyck, Robert A. 2013. The Climate Policy Dilemma. *Review of Environmental Economics and Policy* 7(2): 219-237.

*van den Bergh J.C.J.M. and W.J.W. Botzen. 2015. Monetary Valuation of the Social Cost of CO_2 Emissions: A Critical Survey. *Ecological Economics* 114: 33-46.

II. Principles of Environmental and Resource Economics

A. Welfare Economics

September 9th and 11th

Kolstad, Chapter 3.

Heal, Geoffrey. 2013. Reflections—Defining and Measuring Sustainability. *Review of Environmental Economics and Policy* 6(1): 147-163.

Portney, Paul R. Corporate Social Responsibility: An Economic and Public Policy Perspective *in Environmental Protection and the Social Responsibility of Firms: Perspectives from Law, Economics, and Business*, Bruce L. Hay, Robert N. Stavins, and Richard H.K. Vietor, editors. Washington, DC: Resources for the Future: 107-131.

Bailey, Ronald. 2002. Wilting Greens. *Reason.com* (December 1).

*Arrow, Kenneth, Partha Dasgupta, Lawrence Goulder, Gretchen Daily, et al. 2004. Are We Consuming Too Much? *The Journal of Economic Perspectives* 18(3) 147-172.

*Kneese, Allen V. and William D. Schulze " Ethics and Environmental Economics" In *Handbook of Natural Resource Economics*, Vol. 1, ed. A.V. Kneese and J. L. Sweeney. New York: Elsevier.

B. Markets and Market Failure

September 14th, 16th, 18th and 21st

Kolstad, Chapters 4 and 5.

Ostrom, Elinor et al. 1999. Revisiting the Commons: Local Lessons, Global Challenges. *Science* 284 (April 9) 278-282.

Farley, Joshua et al. 2015. The Vermont Common Assets Trust: An Institution for Sustainable, Just and Efficient Resource Allocation. *Ecological Economics* 109: 71-79.

Portney, Paul R. Trouble in Happyville. *Journal of Policy Analysis and Management* 11 (1): 131–132.

*Frank, Robert. 2008. Chapter 18W: General Equilibrium and Market Efficiency in *Microeconomics and Behavior* McGraw-Hill Irwin: Boston, MA.

C. Benefit Cost Analysis

September 23rd and 25th

Kolstad, Chapter 6.

Office of Management and Budget. 2003. OMB Circular No A-4: Regulatory Analysis (September 17). (Skim section E).

Gayer, Ted and Robert W. Hahn. 2005. Designing Environmental Policy: Lessons from the Regulation of Mercury Emissions. *Journal of Regulatory Economics.* 30 (3): 291-315.

Murdoch, William, Stephen Polasky, Kerrie A. Wilson, Hugh P. Possingham, Peter Kareiva, and Rebecca Shaw. 2007. Maximizing Return on Investment in Conservation *Biological Conservation* 139 (3-4): 375-388.

*Cameron, Trudy. 2010. Euthanizing the Value of a Statistical Life. *Review of Environmental Economics and Policy* 4(2): 161-178.

*Fry, Matthew, Adam Briggle, and Jordan Kincaid. 2015. Fracking and Environmental (In)justice in a Texas City *Ecological Economics* 117: 97-107.

*Hammitt, James K. Positive Versus Normative Justifications for Benefit-Cost Analysis: Implications for Interpretation and Policy. *Review of Environmental Economics and Policy* 7(2): 1-21.

*Hanley, Nick and Clive L. Spash. 1993. *Cost-Benefit Analysis and the Environment*. Brookfield, Vermont: Edward Elgar Publishing Co.

*Heinzerlin, Lisa and Frank Ackerman. 2002. Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection. *Georgetown Environmental Law and Policy Institute: Georgetown University Law Center*.

*Kelman, Steven. Cost-Benefit Analysis: An Ethical Critique. Pages 129-136 in Glickman, Theodore S. and Michael Gough (eds.). 1990. *Readings in Risk* Washington, D.C.: Resources for the Future.

*Portney, Paul R. and John P. Weyant (eds.). 1999. *Discounting and Intergenerational Equity* Washington, D.C.: Resources for the Future.

III. Economic Valuation

A. Introduction

September 28th

Sagoff, Mark. Can We Put a Price on Nature's Services? Pages 16-23 in *Taking Sides: Clashing Views on Controversial Environmental Issues* (9th edition).

Abromovitz, Janet N. Putting a Value on Nature's "Free" Services. In *Taking Sides: Clashing Views on Controversial Environmental Issues* (9th edition).

Gatto, Marino and Giulio A. De Leo. Pricing Biodiversity and Ecosystem Services: The Never-Ending Story. Pages 41-52 in *Taking Sides: Clashing Views on Controversial Environmental Issues* (12th edition).

Morrison, Jim. How Much is Clean Water Worth? Pages 36-40 in *Taking Sides: Clashing Views on Controversial Environmental Issues* (12th edition).

Costanza, Robert and Ralph d'Arge. 1997. The Value of the World's Ecosystem Services and Natural Capital. *Nature* 387 (6630): 253-260.

September 30th

Kolstad, Chapter 7.

*Champ, Patricia A., Kevin J. Boyle, and Thomas C. Brown (editors). 2003. *A Primer in Nonmarket Valuation*. Boston, MA: Kluwer Academic Publishers.

*Freeman, A. Myrick. 2003**.** *The Measurement of Environmental and Resource Values: Theories and Methods* (2nd edition). Washington, D.C.: Resources for the Future.

B. Hedonic Price Method

October 2nd and 5th

Kolstad, Chapter 8.

Donovan, Geoffrey H. and David T. Butry. 2010. Trees in the City: Valuing Street Trees in Portland, Oregon. *Landscape and Urban Planning* 94(2): 77-83.

*Pyndyck R. S. and D. L. Rubenfeld. 2009. Appendix: The Basics of Regression. In *Microeconomics* (7th edition) Upper Saddle River, NJ: Pearson/Prentice Hall.

*Lutzenhiser, Margot and Noelwah R. Netusil. 2001. The Effect of Open Spaces on a Home's Sale Price. *Contemporary Economic Policy* 19 (3) 291-298.

*Mahan, B.L., S. Polasky, and R. M. Adams. 2000. Valuing Urban Wetlands: A Property Price Approach. *Land Economics* 76(1): 100-113.

C. Defensive Expenditures and the Travel Cost Method

October 7th

Kolstad, Chapter 9 (to page 187).

Abdalla, Charles W., Brian A. Roach, and Donald J. Epp. 1992. Valuing Groundwater Quality Changes Using Averting Expenditures: An Application to Groundwater Contamination. *Land Economics* 68(2): 163-169.

October 9th

Kolstad, Chapter 9 (to end).

Loomis, John. 2002. Quantifying Recreation Use Values from Removing Dams and Restoring Free-Flowing Rivers: A Contingent Behavior Travel Cost Demand Model for the Lower Snake River. *Water Resources Research* 38 (6) 1-8.

Yardley, William. 2011. Removing Barriers to Salmon Migration. *The New York Times* (July 29).

D. Contingent Valuation

October 12th

Kolstad, Chapter 10 (to page 209).

Kling, Catherine L., Daniel J. Phaneuf and Jinhua Zhao. 2012. From Exxon to BP: Has Some Number Become Better Than No Number? *Journal of Economic Perspectives* 26(4): 3-26.

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

Hausman, Jerry. 2012. Contingent Valuation: From Dubious to Hopeless. *Journal of Economic Perspectives* 26(4): 43-56.

Nelson, Nanette M., et al., 2015. Linking Ecological Data and Economic to Estimate the Total Economic Value of Improving Water Quality by Reducing Nutrients. *Ecological Economics* 118: 1-9.

*Loomis, John B. 1996. How Large is the Extent of the Market for Public Goods: Evidence from a Nationwide Contingent Valuation Survey. *Applied Economics* 28: 779-782.

*Desvousges, William, Kristy Mathews, and Kenneth Train. 2015. An Adding-Up Test on Contingent Valuations of River and Lake Quality. *Land Economics* 91(3): 556-571.

October 14th

Kolstad, Chapter 10 (page 209 to end)

Johnston, Robert J., Thomas A. Grigalunas, James J. Opaluch, Marisa Mazzotta, and Jerry Diamantedes. 2002. Valuing Estuarine Resource Services Using Economic and Ecological Models: The Peconic Estuary System Study. *Coastal Management* 30: 47-65.

*Shogren, Jason F. and Laura O. Taylor. 2008. On Behavioral-Environmental Economics. *Review of Environmental Economics and Policy* 2(1) 26-44.

*Shogren, Jason F. 2006. Valuation in the Lab. *Environmental & Resource Economics* 34: 163-172.

October 16th: Midterm Exam

IV. Controlling Pollution

A. Regulation

October 26th and 28th

Kolstad, Chapter 11.

Knickerbocker, Brad. 2003. How Economics May Reshape Green Policy *Christian Science Monitor* (October 3).

Ambec, Stefan, Mark A. Cohen, Stewart Elgie, and Paul Lanoie. 2013. The Porter Hypothesis at 20: Can Environmental Regulation Enhance Innovation and Competitiveness? *Review of Environmental Economics and Policy* 7(1): 2-22.

Anderson, Soren T., Ian W. H. Parry, James M. Sallee, and Carolyn Fisher. 2011. Automobile Fuel Economy Standards: Impacts, Efficiency, and Alternatives. *Review of Environmental Economics and Policy* 5(1): 89-108.

*Burtraw, Dallas, Art Fraas, and Nathan Richardson. 2011. Greenhouse Gas Regulation Under the Clean Air Act: A Guide for Economists. *Review of Environmental Economics and Policy* 5(3): 293-313.

B. Pigouvian Fees

October 30th, November 2nd and 4th

Kolstad, Chapter 12

Leape, Jonathan. 2006. The London Congestion Charge. *Journal of Economic Perspectives* 20(4): 157-176.

Viscusi, W. Kip, Joel Huber and Jason Bell. 2012. Alternative Policies to Increase Recycling of Plastic Water Bottles in the United States. *Review of Environmental Economics and Policy* 6(2): 190-211.

Tietenberg, Tom H. 2013. Reflections—Carbon Pricing in Practice. *Review of Environmental Economics and Policy* 7(2): 313-329.

*Metcalf, Gilbert E. 2009. Designing a Carbon Tax to Reduce U.S. Greenhouse Gas Emissions. *Review of Environmental Economics and Policy* 3(1): 63-83.

*Nordhaus, William D. 2007. To Tax or Not to Tax: Alternative Approaches to Slowing Global Warming *Review of Environmental Economics and Policy* 1(1) 26-44.

C. Property Rights and Marketable Permits

November 6th

Kolstad, Chapter 13 (to page 272)

Coase, Ronald H. The Problem of Social Cost. *Journal of Law and Economics* (October): 1-44. *(focus on pages 1-28)*

*Anderson, Terry L. and Dominic P. Parker. 2013. Transaction Costs and Environmental Markets: The Role of Entrepreneurs. *Review of Environmental Economics and Policy* 7(2): 259-275.

November 9th and 11th

Kolstad, Chapter 13 (page 272 to end)

Goulder, Lawrence H. 2013. Markets for Pollution Allowances: What Are the (New) Lessons? *Journal of Economic Perspectives* 27 (1): 87-102.

Newell, Richard G., William A. Pizer, and Daniel Raimi. 2013. Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges. *Journal of Economic Perspectives* 27 (1): 123-146.

Fisher-Vanden, Karen and Sheila Olmstead. 2013. Moving Pollution Trading from Air to Water: Potential, Problems, and Prognosis. *Journal of Economic Perspectives* 27 (1): 147-172.

*Hahn, Robert W. 2009. Greenhouse Gas Auctions and Taxes: Some Political Economy Considerations. *Review of Environmental Economics and Policy* 3(1): 167-188.

*Hahn and Hester. 1989. Marketable Permits: Lessons for Theory and Practice. *Ecology Law Quarterly* 16: 361-406.

*Metcalf, Gilbert E. 2009. Market-based Policy Options to Control U.S. Greenhouse Gas Emissions *Journal of Economic Perspectives* 23(2): 5-27.

*Schmalensee, Richard and Robert Stavins. 2013. The SO_2 Allowance Trading System: The Ironic History of a Grand Policy Experiment. *Journal of Economic Perspectives* 27 (1): 103-122.

D. Regulation Over Space and Time

November 13th

Kolstad, Chapter 14

E. Regulations Under Uncertainty

November 16th

Kolstad, Chapter 15

F. Audits, Enforcement, and Moral Hazard; Voluntary Actions and Agreements

November 18th, 20th, 23rd, and 25th

Kolstad, Chapters 16 and 17

Gray, Wayne B. and Jay P. Shimshack. 2011. The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence. *Review of Environmental Economics and Policy* 5 (1): 3-24.

Alberini, Anna and Kathleen Segerson. 2002. Assessing Voluntary Programs to Improve Environmental Quality. *Environmental and Resource Economics* 22 (1-2): 157-184.

*Bi, Xiang and Madhu Khanna. 2012. Reassessment of the Impact of the EPA's Voluntary 33/50 Program on Toxic Releases. *Land Economics* 88(2): 341-361.

*Grabs, Janina. 2015. The Rebound Effects of Switching to Vegetarianism. A Microeconomic Analysis of Swedish Consumption Behavior. *Ecological Economics* 116: 270-279.

V. Advanced Topics

A. Risk and Uncertainty

November 30th

Kolstad, Chapter 18

B. International/Interregional Competition

December 2nd and 4th

Kolstad, Chapter 19

Levinson, Arik. 2010. Offshoring Pollution: Is the United States Increasingly Importing Polluting Goods. *Review of Environmental Economics and Policy* 4(1): 63-83.

Esty, Daniel C. 2001. Bridging the Trade-Environment Divide. *Journal of Economic Perspectives* 15(3): 113-130.

*Bhagwati, Jagdish. 1993. The Case for Free Trade. *Scientific American* (November) 42-49.

*Copeland, Brian R. and M. Scott Taylor. 2004. Trade, Growth, and the Environment. *Journal of Economic Literature* XLII (March): 7-71.

*Daly, Herman E. 1993. The Perils of Free Trade. *Scientific American* (November) 50-57.

*Delbeke, J., G. Klaasen, T. van lerland, and P. Zapfel. 2010. The Role of Environmental Economics in Recent Policy Making at the European Commission. *Review of Environmental Economics and Policy* 4(1): 24-43.

*Ederington, Josh. 2010. Should Trade Agreements Include Environmental Policy? *Review of Environmental Economics and Policy* 4(1): 84-102.

*Ruffing, Kenneth G. 2010. The Role of the Organization for Economic Cooperation and Development in Environmental Policy Making. *Review of Environmental Economics and Policy* 4(2): 199-220.

*Wolff, Hendrik and Lisa Perry. 2010. Trends in Clean Air Legislation in Europe: Particulate Matter and Low Emission Zones. *Review of Environmental Economics and Policy* 4(2): 293-308.

C. Environment, Growth, and Development

December 7th and 9th

Kolstad, Chapter 20.

Carson, Richard T. 2010. The Environmental Kuznets Curve: Seeking Empirical Regularity and Theoretical Structure. *Review of Environmental Economics and Policy* 4(1): 3-23.

*Kahn, Matthew E. 2006. Green Cities: Urban Growth and the Environment. Brookings Institution Press: Washington, D.C.

Assignment List, Due Dates, and Exam Schedule

The following is a list of assignments and due dates. All assignments are due in class on the date listed below. In fairness to other students, late assignments will be penalized a full grade for each day or partial day past the due date. Assignments handed in more than three days after the due date will not be accepted.

Examinations:

The midterm exam is on Friday, October 16th. The comprehensive final exam will be given during final exam week. The exact date and time of the final will be confirmed in the second part of the semester by the Registrar's Office.

Problem Sets

	Distributed	**Due**
Problem Set #1	September 18th	September 25th
Problem Set #2	October 2nd	October 9th
Problem Set #3	November 6th	November 13th
Problem Set #4	November 25th	December 4th

Project Timeline

Task	**Date**
Introduction to Zotero	Friday, September 11th 3:10-4pm, Library 17
Introduction to Excel	Monday, September 14th or Thursday, September 17th
Introduction to ArcGIS	Friday, September 18th 3:10-4pm, Vollum 126
Lindsey Maser, City of Portland BPS and Steve Yeadon, Assistant Director of Facilities Operations	Friday, September 25th from 3:10-4pm
Project preference due	Friday, September 11th
Group tasks, timeline and update	Friday, October 2nd
Update	Friday, November 6th
Section rough drafts due	Friday, November 20th
Final project sections due	Start of the final exam