

# **AREC 551 – Applications of Environmental and Natural Resource Economics Spring 2014, 4 Credits**

## **Professor**

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## **Course Description**

This course applies and expands upon concepts, theories, and methods in environmental and natural resource economics introduced in AREC 550. In addition to applications of what was introduced in AREC 550, topics in this course will include non-market valuation, discounting, and benefit-cost analysis, as well as the role and importance of institutions, appropriate research methods, and the philosophical basis for normative judgments in economics.

## **Objectives**

The course objectives are:

- To develop students' ability to apply theory and utilize empirical evidence in evaluating environmental and natural resource issues from "problem solving" perspective at a level appropriate for M.S. students.
- To provide students with the necessary background and tools, and to expose students to relevant research and policy analysis, to develop their skills for conducting applied research and evaluation of policy at a level appropriate for an M.S. thesis.

## **Learning Outcomes**

Students completing this class successfully will be:

- Able to identify and describe a range of market and policy failures that can plague environmental resource allocation;
- Able to identify and describe a range of regulatory, market-based and other mechanisms that can be used to address pollution and other environmental and natural resource policy issues, and assess their potential strengths and weaknesses (private property, common property, standards, taxes, and tradable permits);
- Able to recognize a range of social welfare criteria and explain their differences including Pareto efficiency, potential Pareto efficiency, and other approaches to social welfare for evaluating natural resource allocations and policies.
- Able to identify and describe standard approaches to using quantitative methods and economic models for addressing environmental and natural resource issues;
- Able to frame and discuss environmental and resource issues and policy within the context of economic theory, methods and empirical evidence.

**Prerequisites:** AREC 550

**Lectures:** The class meets Mondays and Wednesday at 10:00 – 11:40.

**Office Hours:** Monday and Wednesday 3:30 – 5:00, or by appointment.

**Textbooks (Required):** We will refer to materials assigned in AREC 550 from the texts:

Hanley, N., J.F. Shogren, and B. White. 2007. *Environmental Economics in Theory and Practice*. 2<sup>nd</sup> Ed. New York: Palgrave Macmillan.  
Conrad, J.M. *Resource Economics*. Cambridge, UK: Cambridge University Press, 1999.

Other potentially useful books include:

Baumol, W.J. and W.E. Oates. 1988. *The Theory of Environmental Policy*. 2<sup>nd</sup> Ed. New York: Cambridge U. Press.  
Kolstad, C.D. 2010. *Environmental Economics*, 2<sup>nd</sup> Ed. New York: Oxford University Press.  
Stavins, R.N., Ed. 2012. *Economics of the Environment. Selected Readings*. 6<sup>th</sup> Ed. New York: WW Norton.

The Hanley, Shogren, & White (HSW) and Conrad books are available at the OSU bookstore. All other required or recommended readings will be available on Blackboard.

### **Course Requirements**

Exercises/problem sets: 25% of total  
Midterm Exam: 25%  
Final Exam: 35%  
Attendance, participation: 15%

There are no exceptions to the exam dates. Please make travel plans accordingly. There are no makeup exams or extra credit assignments. Any unexcused absence from an exam will receive a grade of zero. An absence will be excused only with appropriate documentation.

The course schedule, readings and assignments below is flexible, and adjustments may still be made as we proceed.

A # in front of a reading indicates that these will involve student presentations, or on the case of the CV a debate of sorts. CBA or spreadsheet exercises may also be given.

### Course Outline and Readings (Revised)

- I. **Introduction** (March 31, 2014)
  - Characklis, et al., 2011. In Increasing the Role of Economics in Environmental Research (or Moving beyond the Mindset That Economics = Accounting). *Environmental Science and Technology* 45. (pubs.acs.org/est).
  - Robert Lackey, 2006. Axioms of Ecological Policy. *Fisheries*, 31(6).
  
- II. **Water Economics – Urban**
  - Hanemann, W. Michael, 1997. Price and Rate Structures, Chapter 5 in *Urban Water Demand Management and Planning* edited by Duane Baumann, John Boland, and Michael Hanemann. New York: McGraw Hill. Pages 1-26.

- Olmstead, S. M., and R. N. Stavins (2009), Comparing price and nonprice approaches to urban water conservation, *Water Resour. Res.*, 45.
- III. **Water Economics – Agriculture**
- Boehlert, Brent B., and William K. Jaeger. "Past and future water conflicts in the Upper Klamath Basin: An economic appraisal." *Water Resources Research* 46.10 (2010).
  - Jaeger, WK. 2014 forthcoming. Chapter 1.2 Institutions and Water. In *Handbook of Water Economics*: Ariel Dinar and Kurt Schwabe, Editors.
- IV. **Institutions, Welfare and Efficiency (two class meetings)**
- Bromley, Daniel W. *Economic interests and institutions: The conceptual foundations of public policy*. Oxford: Basil Blackwell, 1989. Pages 1-36.
  - Coase, Ronald Harry. "Problem of social cost, the." *Jl & econ.* 3 (1960): 1-44.
  - McCloskey, Deirdre N. "The good old Coase theorem and the good old Chicago school: A comment on Zerbe and Medema." *Coasean Economics Law and Economics and the New Institutional Economics*. Springer Netherlands, 1998. 239-248.
- V. **Environmental Kuznets Curve; Trade and the Environment (two classes)**
- Grossman, Gene M., and Alan B. Krueger. "Economic growth and the environment." *The quarterly journal of economics* 110.2 (1995): 353-377.
  - Carson, Richard T. "The environmental Kuznets curve: seeking empirical regularity and theoretical structure." *Review of Environmental Economics and Policy* 4.1 (2010): 3-23.
- VI. **Environmental taxation and the double dividend hypothesis**
- Lipsey, RG and Lancaster, K. 1956-57. The General Theory of Second Best. *Review of Economic Studies*. (Read pages 11-18 only).
  - Goodstein, E. 2003. The Death of the Pigovian Tax? Policy Implications from the Double-Dividend Debate. *Land Economics*
  - Jaeger, William K. "Environmental taxation and the double dividend." *Online Encyclopedia of Ecological Economics (OEEE)*, see [http://www.ecoeco.org/education\\_encyclopedia.php](http://www.ecoeco.org/education_encyclopedia.php) (2003).
- VII. **Theory and Methods of Environmental Valuation (two weeks)**
- A. Theory of valuation  
HSW, Chapter 11, pp. 322-332.
- B. Contingent valuation & choice modeling  
HSW, Chapter 11, pp. 332-344.  
#Hausman, Jerry. "Contingent valuation: from dubious to hopeless." *The Journal of Economic Perspectives* 26.4 (2012): 43-56.  
#Carson, Richard T. "Contingent valuation: a practical alternative when prices aren't available." *The Journal of Economic Perspectives* (2012): 27-42.

#Kling, Catherine L., Daniel J. Phaneuf, and Jinhua Zhao. "From Exxon to BP: Has some number become better than no number?." *The Journal of Economic Perspectives* (2012): 3-26.

C. Revealed preference, travel cost method

HSW, Chapter 11, pp. 344-352.

#Carson, R. T., et al., 1996. Contingent valuation and revealed preference methodologies: comparing the estimates for quasi-public goods. *Land Economics* vol. 72(1): 80-99.

D. Hedonic pricing models

HSW, Chapter 11, pp. 352-356.

Smith, V. Kerry, and Ju-Chin Huang, 1995. Can markets value air quality: a meta-analysis of hedonic property value models. *Journal of Political Economy* Vol. 103(1): 209-227.

E. Value typology, ecosystem service valuation

HSW, Chapter 11, pp. 356-357.

National Research Council. *Valuing Ecosystem Services: Toward Better Environmental Decision-Making*. Washington, DC: The National Academies Press, 2004. Executive Summary, Chapters 1-2.

#Vatn, Arild, and Daniel W. Bromley. "Choices without prices without apologies." *Journal of environmental economics and management* 26.2 (1994): 129-148.

VIII. **Valuation Applications:**

#Muller, NZ, and R Mendelsohn 2007. Measuring the damages of air pollution in the United States. *Journal of Environmental Economics and Management*, Vol. 54(1): 1-14.

#Loomis, J., 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 Resour. Res.*, 38(6), doi:[10.1029/2000WR000136](https://doi.org/10.1029/2000WR000136), 2002.

IX. **Fishery applications**

#Arnason, Ragnar. "Property rights in fisheries: Iceland's experience with ITQs." *Reviews in Fish Biology and Fisheries* 15.3 (2005): 243-264.

X. **Research methods – debate and critique**

#Timmins, Christopher, and Wolfram Schlenker. "Reduced-form versus structural modeling in environmental and resource economics." *Annu. Rev. Resour. Econ.* 1.1 (2009): 351-380.

McCloskey, Deirdre N., and Stephen T. Ziliak. "The standard error of regressions." *Journal of Economic Literature* (1996): 97-114.

XI. **Discounting**

Conrad, JM., Resource Economics, pp. 11-17.  
Arrow, et al., 2013. Determining Benefits and Costs for Future Generations. Science Vol. 341, July 26.

**XII. Benefit-cost analysis**

Arrow, KJ, et al. Benefit-cost analysis in environmental, health, and safety regulation: a statement of principles. American Enterprise Institute, 1996.

#Burtraw, Dallas, Ranjit Bharvirkar, and Meghan McGuinness. "Uncertainty and the net benefits of emissions reductions of nitrogen oxides from electricity generation." *Land Economics* 79.3 (2003): 382-401.

# S. Sathirathai and E.B. Barbier. 2001. Valuing mangrove conservation in Southern Thailand. *Contemporary Economic Policy*. Vol. 19(2), 2001.

**XIII. Climate Change and carbon policies**

Goulder LH, and A Schein, 2013. Carbon tax vs. cap and trade: a critical review. NBER Working Paper 19338.

Brent Sohngen and Sandra Brown, Measuring leakage from carbon projects in open economies: a stop timber harvesting project in Bolivia as a case study. *Can. J. For. Res.* 34: 829–839 (2004)

Pindyck, R. Climate Change Policy: What Do the Models Tell Us? *Journal of Economic Literature* 2013, 51(3), 860–872

**Additional Case Studies/Applications (time permitting)**

Rising, James A., and Geoffrey M. Heal. "Global Benefits of Marine Protected Areas." NBER Working Paper. Available at SSRN 2380445 (2014).

Cullen, Joseph. "Measuring the environmental benefits of wind-generated electricity." *American Economic Journal: Economic Policy* 5.4 (2013): 107-133.

Ian J. Bateman, Georgina M. Mace, Carlo Fezzi, Giles Atkinson, Kerry Turner. *Economic Analysis for Ecosystem Service Assessments*. Environmental and Resource Economics, 2011.

Murray, B., B. Sohngen, and MT Ross, 2007. Economic consequences of consideration of permanence, leakage, and additionality for soil carbon sequestration projects. *Climate Change* 8-:127-143.

### *Students with Disabilities*

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

### *Student Conduct*

OSU policies with regard to academic dishonesty and disruptive behavior will be strictly followed. Oregon State University defines academic dishonesty as: “An intentional act of deception in which a student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work.” Academic dishonesty includes: Cheating, Fabrication, Assisting, Tampering, Plagiarism. More information is available at: <http://oregonstate.edu/studentconduct/> .