

**AREC 652: Advanced Environmental Economics**  
Course Syllabus

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***Course Objective:***

This Ph.D. level course is designed to guide students through the frontier areas of environmental economics. We begin by studying the issue of externalities and methods to regulate externalities. We then examine the impacts of uncertainty and information asymmetry on the choice of policy instruments for regulating externalities. Both point- and nonpoint-source pollution issues will be addressed. We end the course by considering environmental regulation in practice, including the optimal design of conservation programs.

***Prerequisite:***

This course will use both economic theory and econometrics. At a minimum, students should have completed the 500 level of microeconomics sequence (511-512-513) and the 500 level of econometrics sequence (525-526). In addition, having completed the 600 level microeconomics sequence (611-612-613) is advisable.

***Grading:***

Midterm I (April 21)	25%
Midterm II (May 14)	25%
Presentation	15%
Paper (2-page outline is due April 30, final paper is due June 4)	35%

***Texts and Readings:***

Most readings for this class are journal articles. All readings have been reserved in the Castle Reading Room. You should read all the materials indicated by an asterisk in the reading list and read the rest as much as you can. In addition, I recommend that you have access to the following books, which are available from the OUS bookstore.

Baumol, W.J., and W.E. Oates. 1988. *The Theory of Environmental Policy*, 2<sup>nd</sup> Edition. Cambridge: Cambridge University Press.

***Paper:***

Subject: The paper should provide a theoretical and/or empirical analysis of a contemporary environmental issue or policy, with particular attention to the economic aspect of the problem. The paper should demonstrate that you are able to conceptualize the issue for theoretical analysis and/or apply econometric methods for empirical analysis.

Organization: The paper should include the following sections: a) an introduction, b) a theoretical model, c) results and discussion, and d) conclusions. For an empirical study, it should also include a description of the empirical model and a discussion of data and estimation methods. In the introduction, you should clearly identify the issue to be addressed in the paper and describe the key features of the issue. Next, you may want to develop a theoretical model to analyze the issue. If you are conducting an empirical analysis, you should then discuss the specification of your empirical model and the data and estimation methods. Finally, summarize your basic points and present your conclusions.

Length: The paper should be no longer than 12 pages (8.5"x11" paper, double spaced, a 10 to 12 point type face), excluding cover page, figures, tables, and references. This page limit is strictly enforced. You should follow either the style of *American Journal of Agricultural Economics (AJAE)* or style of *Journal of Environmental Economics and Management (JEEM)*.

References: Be sure to provide a list of references. Follow the style of AJAE or JEEM.

Deadlines: You must submit a two-page outline of the paper by May 2, 2007. The outline should describe the issue you are going to address in the paper and the general model you are going to use in the analysis. You are encouraged to meet with the instructor to discuss the topic as early as possible. The final paper is due on June 6, 2007. No exception.

**AREc 652: Advanced Environmental Economics  
Reading List**

(\* indicates required readings)

**0. Overview of Environmental Economics**

Bromley, D. W. "The Emergency and Evolution of Environmental and Natural Resource Economics." In *Frontiers in Resource and Rural Economics*, eds. JunJie Wu, Paul Barkley, and Bruce Webber. Washington DC: RFF Press, 2008.

Cropper, M.L., and W.E. Oates. "Environmental Economics: A Survey." *J. of Economic Literature*, vol. XXX(June 1992): 675-740.

**1. Externalities and Environmental Policy Instruments I: Complete Information**

**A. Pigouvian Taxes, Pollution Standards, and Liability Rules (Lectures 1 & 2)**

\*Baumol, W.J., and W.E. Oates. *The Theory of Environmental Policy*. Chapters 2-4.

\*Spulber, D. 1985. Effluent Regulation and Long-Run Optimality. *J. Environmental Economics and Management* 12: 103-116.

Bird, P. 1987. The Transferability and Depletability of Externalities. *J. Environmental Economics and Management* 14: 54-57.

Shibuta, H., and J. Winrich. 1983. Control of Pollution when the Offended Defend Themselves. *Economica* 50: 425-437.

**B. Tradeable Permits (Lecture 3)**

\*Baumol, W.J., and W.E. Oates. *The Theory of Environmental Policy*. Chapter 12.

\*Montgomery, D. 1972. Markets in Licenses and Efficient Pollution Control Programs. *Journal of Economic Theory* 5: 395-418.

**C. Incentive-Based Approaches for Environmental Protection (Lectures 4, 5, 6)**

\*Wu, JunJie, David Zilberman, Bruce A. Babcock. "Environmental and Distributional Effects of Conservation Targeting Strategies." *Journal of Environmental Economics and Management* 41(May 2001): 333-350.

\*Wu, JunJie. "Slippage Effects of the Conservation Reserve Programs." *American Journal of Agricultural Economics*, 82(November 2000): 979-992.

- \*Wu, JunJie, Richard M. Adams, David Zilberman, and Bruce A. Babcock. 2000. Targeting Resource Conservation Expenditure. *Choices*, Second Quarter 2000.
- \*Wu, JunJie, and William Boggess. 1999. The Optimal Allocation of Conservation Fund. *Journal of Environmental Economics and Management* 37(November 1999): 302-321.
- Wu, JunJie, and Bruce A. Babcock. 1996. Contract Design for the Purchase of Environmental Goods from Agriculture. *American Journal of Agricultural Economics* 78(November): 935-45.

### ***Midterm I***

## **2. Externalities and Environmental Policy Instruments II: Incomplete Information**

### ***A. Instrument Choice Under Uncertainty (Lectures 7, 8, & 9)***

- \*Weitzman, M.L. "Prices vs. Quantities." *Rev. Econom. Studies* 41(1974):477-91.
- \*Lewis, T. 1996. Protecting the Environment When Costs and Benefits are Privately Known. *Rand Journal of Economics* 27:819-847.
- \*Wu, J. 2000. "Input Substitution and Pollution Control under Uncertainty and Firm Heterogeneity." *Journal of Public Economic Theory* 2(2): 273-288.
- \*Adar, Z., and J. M. Griffin. "Uncertainty and the Choice of Pollution Control Instruments." *J. Environ. Econom. Management* 3, 157-167 (1765).
- Kwerel, E. "To Tell the Truth: Imperfect Information and Optimal Pollution Control." *Review of Economic Studies*, 44(1977), 595-601.
- Laffont, J.-J., and J. Tirole. 1993. *A Theory of Incentives in Procurement and Regulation*. Chapter 1.1-2.2.
- Spulber, D. 1988. Optimal Environmental Regulation under Asymmetric Information. *Journal of Public Economics* 35: 163-181.

### ***B. Information Asymmetry and Non-Point Source Pollution Control (Lecture 10 & 11)***

- \*Segerson, K. 1988. Uncertainty and Incentives for Nonpoint Pollution Control. *J. Environ. Econom. Management* 15: 87-98.
- \*Segerson, Kathy, and JunJie Wu. "Voluntary Approaches to Nonpoint Pollution Control: Inducing First-Best Outcomes through the Use of Threats." *Journal of Environmental Economics and Management* 51(March 2006): 165-184.

Wu, Junjie, and Katsuya Tanaka. "Reducing Nitrogen Runoff from the Upper Mississippi River Basin to Control Hypoxia in the Gulf of Mexico: Easements or Taxes?" *Marine Resource Economics* 20, 2(July 2005): 121-144.

Cabe, R., and J. Herriges. 1992. The Regulation of Non-point Source Pollution under Imperfect and Asymmetric Information. *J. Environ. Econom. Management* 22: 134-146.

Wu, J. and B. A. Babcock. "Spatial Heterogeneity and the Choice of Instruments to Control Nonpoint Pollution." *Environmental and Resource Economics* 18(2) (February 2001):173-192.

Wu, J., H.P. Mapp, and D. Bernard. 1996. Integrating Economic and Physical Models for Analyzing Water Quality Impacts of Agricultural Policies in the High Plains." *Review of Agricultural Economics* 18(1996):353-372.

### ***C. Monitoring and Enforcement (Lecture 12)***

\*Polasky, S., and H. Doremus. 1998. When the Truth Hurts: Endangered Species Policy on Private Land with Incomplete Information. *J. Environ. Econom. Management* 35(1): 22-47.

\*Swierzbinski, J.E. 1994. Guilty until Proven Innocent – Regulation with Costly and Limited Enforcement. *J. Environ. Econom. Management* 27:127-146.

Kaplow, L. and S. Shavell. 1994. Optimal Law Enforcement with Self-Reporting of Behavior. *Journal of Political Economy* 102: 583-606.

## ***Midterm II***

### **3. Environmental Regulation in Practice**

#### ***A. The Choice of Policy Instruments in Practice (Lectures 13)***

\*Oates, W., P. Portney, and A. McGartland. 1989. The Net Benefits of Incentive-Based Regulation: A Case Study of Environmental Standard Setting. *American Economic Review* 79: 1233-42.

Buchanan, J., and G. Tullock. 1975. Polluters' Profits and Political Response: Direct Control versus Taxes. *American Economic Review* 65: 139-147.

\*Cropper, M., W. Evans, S. Berardi, M. Ducla-Soares, and P. Portney. 1992. The Determinants of Pesticide Regulation: A Statistical Analysis of EPA Decision-Making. *Journal of Political Economy* 100: 175-197.

#### ***B. Voluntary vs. Mandatory Approaches for Environmental Protection (Lecture 14 & 15)***

- \*Wu, JunJie, and Bruce A. Babcock. 1999. The Relative Efficiency of Voluntary vs. Mandatory Environmental Regulation. *Journal of Environmental Economics and Management* 37(September 1999): 158-175.
  - \* Segerson, K., and T.J. Miceli. 1998. Voluntary Environmental Agreements: Good or Bad News for Environmental Protection? *J. Environmental Economics and Management* 2: 109-130.
  - \* Langpap, Christian, and JunJie Wu. "Voluntary Conservation of Endangered Species: When Does No Regulatory Assurance Mean No Conservation?" *Journal of Environmental Economics and Management* 47 (May 2004): 435-57.
- Wu, JunJie. "Environmental Compliance: The Good, the Bad, and the Super Green." Working paper, Department of Agricultural and Resource Economics, Oregon State University, 2008.

***C. Spatial Modeling and the Economics of Land Use (Lectures 16, 17)***

- \* Wu, JunJie. "Environmental Amenities, Urban Sprawl, and Community Characteristics." *Journal of Environmental Economics and Management*. 52(2006): 527-547.
  - \* Wu, JunJie, and Andrew J. Plantinga. "The Influence of Public Open Space Policies on Urban Spatial Structure." *Journal of Environmental Economics and Management*. 46(September 2003): 288-309.
  - \* Wu, JunJie, and Elena Irwin. "Optimal Land Development with Endogenous Environmental Amenities" *American Journal of Agricultural Economics* 90(February 2008): 232-248.
- Wu, JunJie. "Urban Sprawl and Community Transformation." Working paper, Department of Agricultural and Resource Economics, Oregon State University, 2008.