

THE GEORGE WASHINGTON UNIVERSITY
Department of Economics
Economics of the Environment and Natural Resources, ECON 6237
MONROE 352
Fall 2018, Thursday, 7:10-9:00 pm

PROFESSOR: Benjamin Simon
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COURSE DESCRIPTION. The course will apply the tools of microeconomic theory to analyze a variety of environmental and natural resource problems. Knowledge of microeconomic theory at the intermediate, undergraduate level (e.g., PPPA 6007) is essential for the course. Problems will be analyzed using a combination of graphical and mathematical techniques as well as classroom exercises. Although calculus is not required, some concepts from calculus will be employed; these will be explained in class and in handouts as appropriate.

TEXTBOOKS and READINGS.

Readings are divided into two categories: required and optional. All required readings will be on available via Blackboard's electronic reserves. Students will be expected to have completed the readings before the class for the relevant topic related to the reading.

- Tietenberg and Lewis, *Environmental and Natural Resource Economics*, Routledge, 11th edition, 2018.
- Readings from Alan Randall, *Resource Economics*, 2nd ed., John Wiley, 1987 are denoted with **AR**. These readings are on Bb.

REQUIREMENTS AND GRADING.

Math/Excel Assignments. Five assignments using Excel (or statistical software of your choosing) are required. The math review assignment is designed to review relevant math concepts and will not be graded. The excel assignments and datasets will be posted on Blackboard in the “projects” area. These assignments may be done in groups of 3 or less. ***Please turn in hard copies of your assignment on the due date.*** Late assignments will only be accepted with the permission of the instructor.

Benefit-cost presentation. Additional details will be provided on this assignment.

Turning in assignments. Excel assignments are due in **hard copy** in class unless I indicate otherwise.

Submission of Written Work Products Outside of the Classroom. It is your responsibility to ensure that I receive your assignment on time. It is not permissible to submit assignments on the digital dropbox of Blackboard unless I tell you so.

Collaboration on Assignments. You are welcome to work in groups; however, you are expected to write up your answers individually.

Late work will not be graded (unless an exception has been granted prior to the due date).

Tests. There is a midterm and a final exam. The midterm exam will be a take home exam that will be distributed on a date to be determined. The time and place of the final exam will be announced later in the semester.

Class participation. Classroom participation is strongly encouraged.

Grading. The course grade will be calculated using the following weights: midterm exam -- 25%; final exam -- 30%; Excel assignments -- 30%; benefit-cost presentation -- 10%; class participation -- 5%. I expect that you will come to class having read the assigned readings and prepared to engage with me and other students in discussing the material we are covering; class participation is more than just attendance.

Graphing. I highly recommend Desmos (<https://www.desmos.com/calculator>) for graphing equations. While not a substitute for your ability to draw graphs by yourself or for using Excel, it is a highly useful tool for checking your work and understanding how changes in an equation change the graph.

Late or Missed Class. If you are late or absent from class, it is your responsibility to obtain all announcements, assignments, and handouts from Blackboard or from your classmates.

Exam Dates. Please notify me in the first two weeks of class if you are aware of a pre-existing conflict, such as a religious holiday you observe, that will preclude you from taking either the midterm or final at the assigned time. To the extent possible, we will work together to reschedule the exam as close to the original date as possible.

Incompletes. You must consult with me to obtain an incomplete no later than the last day of classes in the semester. At that time, we will both sign the CCAS contract for incompletes and submit a copy to the School Director.

Changing Grades After Completion of Course. No changes can be made in grades after the conclusion of the semester, other than in cases of clerical error.

Accommodation for Students with Disabilities. If you need extra time on exams or assignments due to a disability, let me know in the first week of class. In order to receive accommodations on the basis of disability, you'll need to provide proper documentation to the Office of Disability Support Services, Marvin Center 436, 202-994-8250. Accommodations will be made based upon the recommendations of the DSS Office.

University Counseling Center. The University Counseling Center (UCC), 202-994-5300, offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations; confidential assessment, counseling services (individual and small group), and referrals

Religious Holidays. If you need to miss a class to observe a religious holiday, please notify me the first week of classes about any conflict; we will arrange an absence without penalty.

Academic Integrity. The George Washington University is guided by the standards of academic integrity. Students are reminded to honor the Code of Academic Integrity, which can be viewed at:

<http://www.gwu.edu/~ntegrity/code.html>

If you are not familiar with the Code, you should read through it carefully.

Topics, Readings, and Assignment Due Dates

Class	Topic	Assignment or test	Reading
8/30	Micro review/Welfare econ	Math review (this assignment will not be graded)	<ol style="list-style-type: none"> 1. AR, Chapter 5. 2. Fullerton, Don, and Stavins, R. 1998. "How Economists See the Environment," <i>Nature</i>, Vol. 395, October.
9/6	Property rights/mkt failure, government failure	Excel 1 – supply and demand; negative externalities	<ol style="list-style-type: none"> 1. Tietenberg and Lewis, Chapter 2 2. Daniel H. Cole, <i>Pollution and Property: The Conceptual Framework</i>, Chapter 1 in <i>Pollution and Property</i>, Cambridge University Press 2002. 3. Farrell, Joseph. Information and the Coase Theorem. <i>Journal of Economic Perspectives</i>. Vol 1, No. 2, Fall 1987, pp. 113-129. 4. Thomas Dietz, et al. 2003. The Struggle to Govern the Commons, <i>Science</i>, Vol. 302, December 12. <i>Journal of Economic Perspectives</i>, 14(3), pp. 137-158. 5. E. Ostrom, 2003. "Collective Action and the Evolution of Social Norms," <i>Journal of Economic Perspectives</i>, 14(3), pp. 137-158, 2000. 6. Winston, C., 2006. Government Failure versus Market Failure. AEI-Brookings Joint Center for Regulatory Studies. Chapter 1; chapter 2; and Chapter 4. 7. <i>Optional</i>: Davis, Lucas, 2013. The Economic Cost of Global Fuel Subsidies. Energy Institute at Haas (EI @ Haas) Working Paper 247. December. Available online at: https://ei.haas.berkeley.edu/research/working-papers.html. 8. <i>Optional</i>: Do Markets Work for Bees? http://conversableeconomist.blogspot.com/2014/07/do-markets-work-for-bees.html; and Colony collapse disorder: The market response to bee Disease, https://perc.org/sites/default/files/ps50.pdf
9/13	Property rights/mkt failure, government failure		
9/20	Property rights/mkt failure, government failure		
9/27	Benefit cost analysis	Excel 2 –M&I water demand	<ol style="list-style-type: none"> 1. Tietenberg and Lewis, Chapters 3, 4 2. Steven Kelman, "Cost-Benefit Analysis: An Ethical Critique," <i>Regulation</i>, Vol. 10, Jan/Feb 1981, pp. 33-40, along with the replies to this article that appeared in the March/April, 1981 issue of <i>Regulation</i>. 3. Dudley, S, et al. 2017. Consumer's Guide to Regulatory Impact Analysis: Ten Tips for Being an Informed Policy Maker. <i>J. Benefit Cost Anal.</i> 1-18. 4. Loomis, John B., and Rosenberger, Randall S. 2006. "Reducing barriers in future benefit transfers: Needed improvements in primary study design and reporting." <i>Ecological Economics</i>, Vol. 60, pp. 343-350. 5. Stated Preference readings: <ol style="list-style-type: none"> a. Hausman, Jerry. 2012. "Contingent Valuation: From Dubious to Hopeless." <i>Journal of Economic Perspectives</i>, Volume 26, Number 4, Fall, pp. 43–56. b. Carson, Richard T. 2012. <i>Contingent Valuation: A</i>
10/4	Benefit cost analysis	Mid-term handed out	
10/11	Benefit cost analysis	Mid-term due; time during class to work on benefit-cost exercise	

Class	Topic	Assignment or test	Reading
			<p>Practical Alternative when Prices Aren't Available. Journal of Economic Perspectives, Volume 26, Number 4, Fall, Pages 27–42.</p> <p>c. <i>Optional</i>. Johnson, et al. Contemporary Guidance for Stated Preference Studies. JAERE, Vol. 4, No. 2</p> <p>d. . <i>Optional</i>: Haab, T. et al. 2016. "Interesting Questions Worthy of Further Study: Our Reply to Desvousges, Mathews, and Train's (2015) Comment on Our Thoughts (2013) on Hausman's (2012) Update of Diamond and Hausman's (1994) Critique of Contingent Valuation," Applied Economic Perspectives and Policy, Vol 38, No. 1, pp. 183-189.</p> <p>6. Bishop, R. et al. 2017. Putting a value on injuries to natural assets: the BP oil Spill, Science, April 21, Vol 356, issue 6335.</p> <p>7. Bartik, T., 2015. "The Social Value of Job Loss and Its Effect on the Costs of U.S. Environmental Regulations," Review of Environmental Economics and Policy, Vol. 9, Issue 2, Summer.</p> <p>8. <i>Optional</i>: Goulder, L. and Stavins, R. 2002. "An eye on the future," Nature, Vol. 419, Oct 17.</p> <p>9. <i>Optional</i>: Herman Leonard and Richard Zeckhauser, Cost-Benefit Analysis Defended, Report from the Center for Philosophy and Public Policy, University of Maryland at College Park, Vol. 3, No. 3 (Summer 1983), pp. 6-9. Reprinted in The Environmental Ethics and Policy Book, 3rd ed. (D. VanDeVeer and C. Pierce, eds.), Wadsworth, 2003.</p>
10/18	Instruments for pollution control		<p>1. Tietenberg and Lewis, Chapters 14, 15, and 16</p> <p>2. Goulder, Lawrence, and Parry, Ian W.H., 2008. Instrument Choice in Environmental Policy, Review of Environmental Economics and Policy, pp. 1-24, July.</p> <p>3. Robert S. Pindyck, 2007. Uncertainty in Environmental Economics. Review of Environmental Economics and Policy, Vol. 1, issue 1, winter, pp 45-65.</p> <p>4. Schmalensee R. and Stavins, R. 2017. Lessons Learned from Three Decades of Experience with Cap and Trade. Review of Environmental Economics and Policy. Volume 11, Issue 1, Winter, Pages 59–79.</p> <p>5. Karen Fisher-Vanden and Sheila Olmstead. 2013. "Moving Pollution Trading from Air to Water: Potential, Problems, and Prognosis." Journal of Economic Perspectives. Volume 27, Number 1. Pages 147–172.</p>
10/25	Instruments for pollution control	Benefit-cost exercise presentations	
11/1	Ecosystem services	Excel exercise 3: Hedonics	<p>1. Tietenberg and Lewis, Chapter 13</p> <p>2. Brown, G. 1998. Economics of ESA. J. Econ Perspectives. Vol 12, No. 3, Summer, pp. 3-20.</p> <p>3. Brown, T. Bergstrom, J., and Loomis, J. 2007. Defining, Valuing, and Providing Ecosystem Services. Natural Resources Journal. Volume 47, Spring.</p> <p>4. Langpap, Christian, et al. 2017. The Economics of the U.S.</p>

Class	Topic	Assignment or test	Reading
			Endangered Species Act: A Review of Recent Developments. <i>Review of Environmental Economics and Policy</i> , pp. 1–23
11/8	Exhaustible resources		<ol style="list-style-type: none"> 1. Tietenberg and Lewis, Chapters 5 and 6 2. Oli Tahvonen, A. Economic Sustainability and Scarcity of Natural Resources: A Brief Historical Review, <i>Resources for the Future</i>, June 2000. On Bb and available online at: http://www.rff.org/Documents/RFF-IB-00-tahvonen.pdf. 3. Krautkraemer, Jeffery A. 2005. Economics of Natural Resource Scarcity: The State of the Debate. April 2005 <i>Resources for the Future Discussion Paper</i> 05–14. Available online at: http://www.rff.org/rff/documents/rff-dp-05-14.pdf. 4. Covert, T., et al. 2016. Will We Ever Stop Using Fossil Fuels? <i>Journal of Economic Perspectives</i>, Vol. 30, no. 1, pp 117-138. 5. Livernois, John. The Empirical Significance of the Hotelling Rule. <i>Rev Environ Econ Policy</i>. November 6, 2008.
11/15	Exhaustible resources	Excel 4 – Benefit transfer	
Thanksgiving break 11/21 – 11/24			
11/29	Renewable resources		<ol style="list-style-type: none"> 1. Tietenberg and Lewis, Chapters 9 and 11 2. Carl Bauer, Marketing Water, <i>Marketing Reform, Resources, Resources for the Future</i>, Summer 2003. Available online at: www.rff.org/rff/Publications/Resource_Articles.cfm 3. Howitt, Richard and Hansen, Kristiana. 2005 The Evolving Western Water Markets. <i>Choices</i>. Vol 20, no. 1. 4. Optional: Olmstead, Sheila M. and Stavins, Robert N. 2009. Comparing price and nonprice approaches to urban water conservation. <i>Water Resources Research</i>, Vol 45 W04301. 5. Olmstead, Shelia M. 2010. The Economics of Managing Scarce Water Resources. <i>Review of Environmental Economics and Policy Advance Access</i> published June 24, 2010.
12/6	Climate change	Excel 5 – Exhaustible resources	<ol style="list-style-type: none"> 1. Tietenberg and Lewis, Chapter 17 2. Newell, Richard G., Pizer, William A., Raimi, Daniel. 2014. Carbon Market Lessons and Global Policy Outlook. <i>Science</i>, 21 March, Vol 343, p. 1316. 3. Tietenberg, Tom H. 2013. Reflections—Carbon Pricing in Practice. <i>Review of Environmental Economics and Policy Advance Access</i> published June 10, 2013. 4. Stavins, Robert N. 2008. "Addressing Climate Change with a Comprehensive U.S. Cap-and-Trade System." <i>The Oxford Review of Economic Policy</i>, Volume 24, Number 2, pp. 298-321.
12/?		Final Exam	