

**Economics 275—Environmental Economics**  
**Georgetown University Department of Economics**  
**DRAFT**

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Environmental economics studies the market failure known as externalities—when consumers or producers don’t account for the full social costs of their actions. Examples: when a commuter drives to work in a car that emits carbon monoxide, or when a coal-fired power plant emits sulfur dioxide that causes downwind lakes to become acidic. The course has three parts: (1) placing a monetary value on those intangible, non-traded, environmental amenities like clean air and water, (2) designing efficient and cost-effective public policies to correct those market failures, three analyzing existing and proposed environmental policies on the grounds of efficiency and equity. Applications include renewable resources, the new EPA plan to roll back regulations on mercury emissions from power plants, energy efficiency regulations, carbon taxes, cap-and-trade, international trade, and environmental justice.

**Prerequisite:** ECON-001, Principles of Microeconomics. I will presume familiarity with supply and demand, marginal cost and benefit, consumer and producer surplus, and present discounted value. The rest will be new.

**Text:** There are no required texts. But if you like, take a look at *Markets and the Environment* by Nat Keohane and Sheila Olmstead. This is a nice readable guide, written by two key players in environmental policy. You can access the electronic version of this for free via the Georgetown Library, and key chapters will be distributed in Canvas.

**Requirements:**

1. **Occasional problem sets.** These will be group projects, where group membership is assigned by the instructor. [10%]
2. **Case studies.** On the day that each is to be discussed in class, students are to prepare a 1 or 2-page “talking point” memo summarizing key features of the cases under analysis, and answering the decision question posed by the professor. These will be group projects, where group membership is assigned by the instructor. [10%]
3. **Midterm exam.** [30%]
4. **Final exam.** [50%]

**Case Studies:**

- Case #1 “Arsenic in Drinking Water”
- Case #2 “Seattle’s Cash for Trash”
- Case #3 “Automotive Fuel Economy Standards”
- Case #4 “Mercury and Air Toxics Standards (MATS)”

## Notes:

1. Successful completion of the course requires adherence to the standards of conduct outlined by the Georgetown Honor Code (<https://honorcouncil.georgetown.edu>).
2. As per GU guidelines, course material for Econ 275 represents intellectual property that may only be used by or shared with other students enrolled in the course.

## Outline and Readings:

1. Review and introduction.
  - If you need a refresher on economic concepts, skim chapters 4 and 5 of the Keohane and Olmstead text mentioned above.
  - Some intro readings
    - “Can We Put a Price Tag on a Life? The Shutdown Forces a New Look” (NYTimes 3/24/20)
    - “Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection” Heinzerling and Ackerman
    - “Learning from the Amoco Cadiz oil Spill”
2. Measuring environmental benefits.
  - Keohane and Olmstead Chapter 3, pp 33-43.
  - Valuing lives saved—VSL
    - [“Using data from the Census of Fatal Occupational Injuries to estimate the value of a statistical life”](#) Viscusi 2013
    - [EPA guidelines for mortality risk reduction](#)
    - “Age, autos, and the value of a statistical life” O’Brien 2018
  - Contingent Valuation
    - Carson *et al.*, “Contingent Valuation and Lost Passive Use” *EER* 2003
    - Read at least one of the following:
      - Kling et al “From Exxon to BP” *JEP* 2012
      - Carson “Contingent Valuation: A Practical Alternative” *JEP* 2012
      - Hausman “Contingent Valuation: From Dubious to Hopeless” *JEP* 2012
  - Travel cost
    - Hotelling letter to the National Park Service 1947
    - [http://www.ecosystemvaluation.org/travel\\_cost.htm](http://www.ecosystemvaluation.org/travel_cost.htm)
  - Hedonics
    - Technical aside: instrumental variables
    - Chay and Greenstone “Does Air Quality Matter” 2005 (This is a hard paper. Read through section IV, Figures 2-5, and Table 2 and its discussion.)
  - Defensive expenditures
    - Ito and Zhang “Willingness to Pay for Clean Air” (A hard paper. Read through section III, and see Figure 2.)
  - Happiness
    - Levinson [“Valuing Public Goods Using Happiness Data”](#) *JPubE* 2012.

3. Regulating Pollution.
  - Pollution taxes and tradable permits.
    - Keohan and Olmstead Chapter 8.
    - Metcalf “Market-Based Policy Options to Control US Greenhouse Gas Emissions” 2009.
  - Oates, *et al.* “The *Net* Benefits of Incentive-Based Regulation” *AER* 1989.
  - Macauley and Walls “Solid Waste Policy” 2010.
  - Fullerton and Kinnaman “Household Responses to Pricing Garbage” *AER* 1996.
4. Energy Efficiency
  - “Energy Efficiency Economics and Policy” Gillingham, Newell, and Palmer 2009.
  - “Advances in Evaluating Energy Efficiency Policies and Programs” Gillingham, Keyes, and Palmer 2018.
  - “Do Energy Efficiency Investments Deliver?” Fowle Greenstone and Wolfram 2018.
    - Press about this at [Vox](#) and a rebuttal from [NRDC](#).
  - “[California energy efficiency: Lessons for the rest of the world, or not?](#)” Levinson 2014.
5. Renewable Portfolio Standards
  - Latest Lawrence Berkeley [Renewable Portfolio Standards Annual Status Update](#)
  - Borenstein “The Private and Public Economics of Renewable Energy Generation” 2012.
  - Greenstone and Nath “Do Renewable Portfolio Standards Deliver?” 2019.
  - Hollingsworth and Rudik “External Impacts of Local Energy Policy” 2018.
6. Regulating automobiles
  - “Designing Policies to Make Cars Greener” Anderson and Sallee” 2016
  - “[Do Car Buyers Undervalue Future Fuel Savings?](#)” Levinson and Sager (in progress)
7. Environmental justice
  - Bento [The Equity Impact of Environmental Policy](#) 2013.
  - “Toxic Wastes and Race at Twenty” United Church of Christ 1987—2007.
  - “Environmental Justice: The Economics of Race, Place, and Pollution” Banzhaf, Ma, and Timmins. 2019.
  - “[Energy Efficiency Standards Are More Regressive than Energy Taxes](#)” Levinson 2019.
8. Growth and the environment.
  - “Economic Growth and the Environment” Grossman and Krueger 1995.
  - “The environmental Kuznets curve after 25 years” Stern 2017.
  - Levinson’s explanations for the EKC
    - [Factoring the EKC](#), Hilton and Levinson 1998.

- ["The Simple Analytics of the Environmental Kuznets Curve"](#) Andreioni and Levinson 2001.
- ["Offshoring pollution: Is the U.S. increasingly importing polluting goods?"](#) 2010.
- [Environmental Engel Curves](#) in VoxEU.org

#### 9. Cost Benefit Analysis

- Keohane and Olmstead Chapter 3 p.43-53
- OMB Circular A4 Primer
- [EPA Guidelines for Economics Analysis](#)