Our economic and social systems are increasingly facing challenging questions regarding the protection of the environment, the management of natural resources and the achievement of economic progress that is in some sense “sustainable”, given technological and natural constraints. Decision-makers express growing concern for these issues, though their approaches to them are not always consistent or well-directed.

This course is founded on the conviction that economic reasoning and policy analysis has much to offer (though it is not a panacea) in addressing these challenges. This course is designed to provide the basic conceptual grounding for the use of economic analysis to inform decisions regarding the proper use of the environment and natural resources, including energy (e.g., oil and natural gas) as well as biological resources (e.g., fisheries).

**Course Goals and Learning Objectives**

The main goal of this course is to introduce students to the major theories and policy issues in the field of environmental and natural resource economics. The course will cover a diverse range of topics: the economics of sustainability, market failures, economic incentives, climate change, environmental and natural resource valuation techniques, exhaustible resources (e.g., oil and natural gas etc.) and renewable resources (e.g., fisheries etc.). Emphasis is placed on the use of analytical techniques to assess real world environmental and natural resource problems.

Upon completion of this course, students will be able to:

- Apply the concepts and tools of economic theory to conduct independent research on environmental and resource economics topics;
- Analyze the efficacy and efficiency of various environmental and natural resource policy options;
- Help advise policymakers on environmental and natural resource-related issues; and
- Demonstrate how economic principles can be applied to improve environmental quality as well as the use of natural resources.
Professor. Michael Shelby. E-mail: mshelby1@jhu.edu.

Office Hours: By Appointment.

Course Requirements. There will a Mid-term and a Final exam. Both the Mid-term and Final exams will be given in class. The Mid-term exam will be worth 40 percent of the final course grade. The Final exam will be worth 40 percent of the final course grade. A Policy Memo, to be discussed in class, will be assigned. The Policy Memo will be worth 15 percent each of the final course grade. Class participation will be worth five percent of your overall course grade. Occasional additional assignments may be given in class from time to time.

Key Due Dates:

- Mid-Term Exam: Saturday, January 14th
- Final Exam: Saturday, January 21st
- Short Description/Bibliography of Policy Memo: Tuesday, January 10th
- Policy Memo Due: Saturday, January 21st


Students with Disabilities. Johns Hopkins University is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact the coordinator listed on the Disability Accommodations page. Further information and a link to the Student Request for Accommodation form can also be found on the Disability Accommodations page.

Ethics and Plagiarism. The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Report any violations you witness to the instructor.
SYLLABUS AND READINGS

1. Sustainable Development

Tietenberg T. and Lewis, L., Chapter One, Visions of the Future, pp. 1 – 11

Pearce, D. and Turner, K., Chapter Two, The Circular Economy

Green Income Accounting

The World Bank, “Are We Saving Enough for the Future?” Chapter Two of Expanding the Measure of Wealth, Indicators of Environmentally Sustainable Development, 1997, pp. 7 – 18

2. Environmental Kuznets Curves

Yandle, B., Vijayaraghavan, M., Bhattarai, M., “The Environmental Kuznets Curve: A Primer”, PERC Research Study, 02 – 1, 2002


THE MANAGEMENT OF THE ENVIRONMENT

3. Economic Efficiency, Property Rights and Market Failures


Pearce, D. and Turner, K., Chapter Four, The Optimal Level of Pollution


Hanley, N., Shogren, J., and White, B., Environmental Economics: In Theory and Practice, Chapter Three, Market Failure, Non-Exclusion and the Commons, pp. 57 – 61
4. Designing Pollution Reduction Strategies

Pearce, D. and Turner, K., Chapter Five, The Market Achievement of Optimal Pollution, pp. 70 – 78

Tietenberg, T. and Lewis, L., Chapter Fourteen, The Economics of Pollution Control: Overview, A Pollution Taxonomy, pp. 359 – 366

Assessment of Alternative Policy Instruments

Taxation

Pearce, D. and Turner, K., Chapter Six, Taxation and Optimal Pollution, pp. 84 – 88


Marketable Tradable Permits

Pearce, D. and Turner, K., Chapter Eight, Marketable Pollution Permits

Case Study: Acid Rain


Case Study: Climate Change

Holdren, J., “Meeting the Climate-Change Challenge”, Presentation at the 8th National Conference on Science, Policy and the Environment, 2008

Hanley, N., Shogren, J., and White, B., Environmental Economics: In Theory and Practice, Chapter Six, Transboundary Pollution and Global Public Goods, Background Issues and a Basic Game, pp. 174 – 190

Supplemental Reading

Standards

Pearce, D. and Turner, K., Chapter Six, Taxation and Optimal Pollution, Charges as a Low-Cost Solution to Standard Setting, pp. 94 – 96

5. Benefit-Cost Analysis


Total Economic Value


Benefits Estimation

Case Study: Hazardous Waste Site


Discounting


Value of a Life Saved


**RESOURCE MANAGEMENT**

6. **Renewable Resources**

Tietenberg, T. and Lewis, L., Chapter Thirteen, Common-Pool Resources: Fisheries and Other Commercially Valuable Species

Pearce, D. and Turner, K., Chapter Sixteen, Renewable Resources, Preservation Value, pp. 251 – 254


**Supplemental Reading**


7. **Nonrenewable and Depletable Resources**


Tietenberg, T. and Lewis, L., Chapter Five, Dynamic Efficiency and Sustainable Development, A Two-Period Model, pp. 103 – 107

Tietenberg, T. and Lewis, L., Chapter Six, Depletable Resource Allocation: The Role of Longer Time Horizons, Substitutes and Extraction Costs, Efficient Intertemporal Allocations and Market Allocations of Depletable Resources and Summary, pp. 123 – 135


**Peak Oil**

http://dieoff.org/page140.htm

Yergin, D., “Stepping on the Gas”, Wall Street Journal, April, 201
http://www.wsj.com/articles/SB10001424052748703712504576232582990089002