

Environmental Economics

11:373:363, 3 credit

Prerequisites: 11:373:121 or 01:220:102

Class hours:

Monday 12:35-1:55 & Thursday 12:35-1:55, BT-123

Instructor:

Gal Hochman

55 Dudley Road, Room 114

Cook Campus

Rutgers, The State University of New Jersey

New Brunswick NJ, 08901

Phone: (848) 932-9142

Fax: (732) 932-8887

Office hours:

Monday, 4:10 to 5:10

Texts:

This text has been ordered for our class. Whether you purchase it is up to you; however, it is a widely accepted standard reference for our field, and would be a worthwhile addition to your personal library.

Field, B.C. and M.K. Field. 2008. Environmental Economics: An Introduction. Fifth Edition. Boston: McGraw-Hill. ISBN 0073375764. This introductory book typically gives a well-organized, non-mathematical treatment; his discussions are well stocked with examples and graphs. Earlier editions have very similar content.

International Environmental Studies, edited by Katlyn S. Morris, Ingrid L. Nelson, V. Ernesto Méndez and Saleem H. Ali

Other books with which you may want to be acquainted include:

Hartwick, J.M. and N.E. Olewiler. 1997. The Economics of Natural Resource Use. Second Edition. New York: Harper and Row Publishers. A good book that is intermediate between Tietenberg and the Cambridge press group. The focus is primarily on resources; pollution externalities are introduced late in the text.

Baumol, W.J. and W.E. Oates. 1988. The Theory of Environmental Policy. Second Edition. New York: Cambridge University Press. An accessible book on important considerations for policies intended to correct for externalities (e.g. emissions, effluent) should be designed.

Costanza, R. (ed.) 1991. Ecological Economics: The Science and Management of Sustainability. New York: Columbia University Press. A collection of contributed chapters on what has become a major area of worldwide interest. Includes overviews, methods, and case studies.

Dixon, J.A. and P.B. Sherman. 1990. Economics of Protected Areas: A New Look at Benefits and Costs. Washington, DC: Island Press. This text combines conceptual chapters with case studies drawn from outside the US. The level of economics is introductory, similar to Tietenberg.

Dorfman, R. and N.S. Dorfman (eds.) 1993. *Economics of the Environment: Selected Readings*. New York: W.W. Norton and Company. An excellent collection of classic and modern articles. Includes many of the most influential articles written in environmental and natural resource economics.

Freeman, A.M. III. 1993. *The Measurement of Environmental and Resource Values: Theory and Methods*. Washington: Resources for the Future. A comprehensive overview of microeconomic foundations and key applications of valuation. Empirical references are contained in footnotes.

Neher, P.A. 1991. *Natural Resource Economics: Conservation and Exploitation*. New York: Cambridge University Press. The breadth of coverage in this text is quite good, and includes amenities from natural environments.

James A. Fay and Dan S. Golomb. 2012. *Energy and the environment*. Oxford University Press, Second edition.

In addition, class slides will be provided

Course Description:

This course surveys the exploitation, allocation and use of renewable and non-renewable resources. It will refer to rules of conduct that organizations/governments have to implement in order to address environmental issues. The course will look into the economic effects of worldwide environmental policies.

Learning Goals:

By the end of this course, you should be able to:

1. Plan environmental and natural resource decisions (including conservation, development, preservation, and restoration) to accomplish objectives that can be stated in economic terms; these include objectives of individuals, groups, nations, and groups of nations.
2. Understand the most common economic causes of environmental and resource policy problems.
3. Diagnose potential environmental and resource policy problems and understand the major economic policy instruments used to correct these problems in market economies.
4. Apply economic logic to environmental and resource issues at scales ranging from individual users and development projects to national income accounts, national policies, and international agreements.

5. Extend the concepts we discuss in class to help you understand new environmental and resource contexts, and (if you need to) develop and analyze new policies.

During severe weather conditions, class cancellation information is available on the recorded message system at (732) 932-7799, or by following links at the Rutgers web site, www.rutgers.edu.

Course Policies:

A. Class Participation

This is a participatory class; while in class, you will frequently be asked during class discussions to (i) offer your opinions about the realism of major assumptions and (ii) draw on your personal experience to offer insight into the logical steps required to arrive at key conclusions. (These responsibilities are much easier to meet if you have done the reading ahead of time.)

B. Required Readings

Our discussions will draw upon an intermediate knowledge of microeconomics. To help you integrate environmental economics with your prior knowledge of economics as quickly as possible, lectures have been prepared presuming you are familiar with the content of required readings before arriving in class. Each required reading within a subject area will be indicated with an asterisk (*); read this before we begin to discuss the listed topic.

C. Other Related Readings

This syllabus has been prepared to serve not only as a guide to the course, but also to give you some exposure to literature in environmental and resource economics. For this reason, this syllabus includes some examples of recent published research from major publishers and journals. The citations are not intended to be an exhaustive list. They have been included to give you examples of influential or representative approaches and to help you gain more from our class discussions. Lectures will frequently make references to related material, but it will never be presumed that you have read any of the other related readings (in contrast to required readings, above). If you are interested in representative articles on subjects other than those listed in the syllabus, please contact me and I will attempt to provide you with additional citations.

D. Lecture Strategy

The lectures will use the readings as starting points, but will contain references to other readings, empirical results, syntheses of trends in the literature, and discussion of key points from the other relevant readings. Missing a lecture will cost you understanding and perhaps a key inspiration you are seeking. We have roughly thirty hours together.

E. Rutgers University Policies

All faculty, staff, and students at our University are bound by University policies. All aspects of this course will be conducted according to these policies. (Please see p10 for additional information.)

Grading Policies:

10% Class participation/attendance

15% Homework

30% Quizzes

30% Midterm Exams (2)

15% Final project

Attendance

Students are required to actively participate in class and attendance will be taken at the beginning of each class. Students are expected to physically attend at least 80% of the lectures.

Weekly Quizzes

The course includes ten general topic areas. A short quiz will be given in class each week/two weeks based on concepts discussed in class and problem sets. Only seven quizzes will be counted toward your grade, so you can drop up to one quiz for any reason. No makeup quizzes will be offered without written medical, religious, or legal documentation. Quizzes missed for documented medical, religious, or legal reasons must be made up within one week of returning to class. Quizzes will be offered via Top Hat.

Class project

The project will use an existing aquaculture system as a baseline that students will strive to improve. Students will design and improve the existing aquaculture system, making it more sustainable through the reduction of both energy use and environmental footprint. Students will work with real data generated via the existing system and make economic decisions that have direct impact on the production process. The students will also judge their projects and analysis and evaluate the various ideas proposed by their peers.

Specifically, toward the middle of the spring semester, the environmental class will break into small groups and explore alternative energy consumption paths (that is, explore the aquaculture system's energy use and learn more of energy efficiency, conservation and use of renewable energy). The groups will also explore the potential of using the existing system/infrastructure to produce energy outputs (e.g., biomass). The groups will come up with alternative plans of how to improve energy use and biomass production. The groups will develop a presentation, where they try to promote their ideas to the class. The students will then evaluate the various proposed projects and rank them. The projects that will be implemented are those ranked the highest with the budget capping the total number of projects built/implemented. Once the selected projects are implemented, the class will be invited to visit the chamber and see how the projects benefited the existing aquaculture system.

Letter Grade Assignments:

At any time you may calculate your grade in this course. There is a total of 100 points possible (see above). Final grades will be assigned using the scale given below. To calculate your expected final grade, simply add the grades from your completed exams with the grades you plan to get on forthcoming exams and refer to the table below.

90+ A
85+ B+
80+ B
75+ C+
70+ C
60+ D
60- F

Accommodations for Students with Disabilities

Please follow the procedures outlined at <https://ods.rutgers.edu/students/registration-form>. Full policies and procedures are at <https://ods.rutgers.edu/>

Absence Policy

Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.

Lecture/Discussion Schedule:

Basic Principles of Environmental and Resource Economics (*week 1*)

Field and Field. "What is Environmental Economics?" In *Environmental Economics: An Introduction*. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "The Economy and the Environment" In *Environmental Economics: An Introduction*. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2000. Introduction. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

U.S. Environmental Protection Agency. 2000. Statutory and Executive Order Requirements for Conducting Economic Analyses. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

U.S. Environmental Protection Agency. 2000. Using Economic Analyses in Decision Making. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

Property Rights, Externalities and Environmental Problems (*weeks 2 to 7*)

*Field and Field. "Benefits and Costs, Supply and Demand" In *Environmental Economics: An Introduction*. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "Economic Efficiency and Markets" In *Environmental Economics: An Introduction*. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "The Economics of Environmental Quality" In *Environmental Economics: An Introduction*. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. The Cost Effectiveness and Environmental Effects of Incentive Systems. In *The U.S. Experience with Economic Incentives for Protecting the Environment*. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2000. Analysis of Social Discounting. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

U.S. Environmental Protection Agency. 2000. Distributional Analyses: Economic Impact Analyses and Equity Assessments. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

U.S. Environmental Protection Agency. 2000. Distributional Analyses: Economic Impact Analyses and Equity Assessments. In *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. Washington: U.S. Environmental Protection, Office of the Administrator. September 2000.

Review session + Midterm Exam (*week 8*)

Evaluating Environmental Policies (*weeks 9 to 11*)

*Field and Field. "Criteria for Evaluating Environmental Policies" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "Decentralized Policies" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "Command-and-Control Policies: The Case of Standards" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. Liability Approaches. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Information Disclosure. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Voluntary Programs. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

Market-Based Environmental Policies (*weeks 11 to 12*)

*Field and Field. "Incentive-Based Strategies: Emission Taxes and Subsidies" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

*Field and Field. "Incentive-Based Strategies: Transferable Discharge Permits" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. Government Policy on Economic Incentives. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Pollution Charges, Fees, and Taxes. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Subsidies for Emission Control. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Trading Programs. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

a) Federal Water Pollution Control Policy

*Field and Field. "Federal Water Pollution Control Policy" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. Water Fees. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Effluent Trading. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Effluent Trading. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

b) Federal Air Pollution Control Policy

*Field and Field. "Federal Air Pollution Control Policy" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. Air Emission Fees. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Trading Programs. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

U.S. Environmental Protection Agency. 2001. Alternative Fuels and Low Emitting Vehicles. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

c) Federal Policy on Toxic and Hazardous Substances

*Field and Field. "Federal Policy on Toxic and Hazardous Substances" In Environmental Economics: An Introduction. Fifth Edition. New York: Irwin/McGraw-Hill.

U.S. Environmental Protection Agency. 2001. Liability Approaches. In The U.S. Experience with Economic Incentives for Protecting the Environment. EPA 240-R-01-001. Washington: U.S. Environmental Protection, Office of the Administrator. January 2001.

Summary and Review of Case Studies + Second Midterm Exam (*week 13*)

Student presentations (*week 14*)

Academic Integrity

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The university's policy on Academic Integrity is available at

<http://academicintegrity.rutgers.edu/academic-integrity-policy>. The principles of academic integrity require that a student:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that

- everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- all student work is fairly evaluated and no student has an inappropriate advantage over others.
- the academic and ethical development of all students is fostered.
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

Enter optional text or delete. Copy and paste elsewhere if you wish to edit. Here is an example from a syllabus (spring 2010 Andy Egan 01:730: 252 Eating Right: Cheating on tests or plagiarizing materials in your papers deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over your fellow students who are graded on the basis of their own work. In this class we will take cheating very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Judicial Affairs, and we will recommend penalties appropriate to the gravity of the infraction. To help protect you, and future students, from plagiarism, we require all papers to be submitted through Turnitin.com.

Students Wellness Services

The Rutgers University Student Assembly urges that this information be included at the end of every syllabus. Edit or delete as you wish:

Just In Case Web App <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <https://rutgers.campuslabs.com/engage/organization/scarletlisteners>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Other Information:

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Rutgers University Policies:

A typical reference for Rutgers University policies that will be used in the conduct of this course is pp. 492-500 in Rutgers, The State University of New Jersey, Campus at New Brunswick. New Brunswick Undergraduate Catalog. 1997-1999. New Brunswick.

All sections of this discussion on policy are of vital importance to you as a Rutgers University student; however for the purposes of this course, please pay particular attention to sections on Registration, Attendance, Nondiscrimination, Policy Against Insult, Defamation, and Harassment, Sexual Harassment, Administrative Policy for Responding to Disruptions, Academic Integrity, and the University Student Disciplinary Hearing Procedure.

Should you have any questions about Rutgers University policies, please contact the personnel listed in the current Undergraduate Catalog.

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