

University at Buffalo, The State University of New York

Fall 2022

ECO 208: Introduction to Environmental Economics

Instructor: Sandipa Bhattacharjee

Class days/time: Tu Th 12:30PM - 1:50PM (08/29/2022 - 12/9/2022)

Primary Course Website: <https://ublearns.buffalo.edu/>

Class Location: Park 440 (In- Person)

Office Hours: By appointment. Please email me to schedule an appointment.

Office Location: Fronczak 414

Contact Information: sandipab@buffalo.edu

Teaching Assistant: Ming Wu

Office Hours: By appointment. Please email me to schedule an appointment.

Office Location: Fronczak 411

Contact Information: mwu44@buffalo.edu

Course Description: This course introduces students to the application of microeconomic theory to current, real-world environmental issues. The course describes the circumstances under which markets fail to allocate resources efficiently and then introduces market-based policy measures that can correct these market failures as well as methods used to quantitatively assess the costs and benefits of these policies. Other topics covered include sustainability, the optimal management of natural resources, and climate change policy. ECO 208 and ECO 412 cannot both be taken for credit.

Student Learning Outcomes: Upon completion of this course, students should be able to:

1. Describe how the basic language, tools, and arguments of economics – including concepts such as efficiency, willingness-to-pay, market failures, externalities, public goods/free-riding, and the equimarginal principle, among others – are applied to the environmental context.
2. Understand economic arguments for government intervention as it pertains to the environment. Identify under what conditions it may be desirable for the government to regulate activities that affect the environment and / or invest in the production of environmental amenities.
3. Understand the various policies available to regulators and how these policies bring about (or fail to bring about) efficient outcomes. Be able to articulate why environmental economists tend to prefer market-based policies over traditional command-and-control approaches.
4. Understand the basic elements of how economists quantitatively evaluate alternative policy options using Benefit-Cost Analysis (BCA). Know the value of BCA as well as its limitations. Be able to describe the methods economists use to compute the benefits of environmental regulation using “non-market valuation” and why doing so is difficult.
5. Be able to critically assess and articulate perspectives on current environmental issues, such as global climate change.

These learning outcomes will be assessed using homework assignments and exams (midterms and final).

Textbook: The following textbook is required for the course:

Keohane and Olmstead, Markets and the Environment, 2nd Edition (Island Press, 2016)

The text is available through campus bookstore or online retailers. The first edition is available through the UB Library both as a physical copy and as an e-book and can be substituted for the second edition. (The page numbers I provide in the course schedule apply to the second edition). Students who opt to purchase earlier edition are responsible for ensuring that the earlier edition contains all the relevant information.

In-class Notes: Lecture notes will be posted on UBlearns before class. Make sure to take notes during the class in addition to what is already posted. This will help you to prepare well for the assignments/tests. It is very important that you try to learn and understand the material when you are writing the notes down. If you try to learn the material while I'm teaching it this will make life much easier! You may want to read the chapter before I cover it to make it easier to comprehend. You can get the notes from the book as well.

Course Requirements: The course aims to provide students with an ability to think about pressing environmental and resource issues and possible solutions in terms of choices, tradeoffs, and scarcity, i.e., in economic terms. This course is intended to serve as an introduction to the concepts, theories, and methods used in the economic analysis of environmental and natural resource issues. The course covers topics such as scarcity, choice, economic concept of value, the principles of market efficiency, and why the market often appears to fail where environmental and natural resource issues are concerned. Environmental policy prescriptions and tools designed to correct such market failures are explored. Economic principles and tools are used to discuss pollution, management and use of renewable natural resources such as forests and fisheries, as well as the problem of managing nonrenewable resources. For many students, these tools will be new, and analyzing policies using these tools might appear to be difficult at first. Students should therefore expect to dedicate time and effort to learn to use these tools. The course is structured such that all students, especially those who take ownership of their learning, are willing to repeatedly try (and sometimes struggle), self-evaluate, and seek help when needed - can be successful.

Pre-requisites: This course have no required prerequisites. Because we will frequently use graphs to illustrate concepts, students should have some facility with basic algebra (e.g., plotting lines on x-y axes and finding the intersection of two lines).

Lecture, Attendance & Participation: Students should try to attend every lecture and actively participate in class discussions. The course is designed to cover a substantial amount of material in a short time. Students should not expect to consistently miss lectures and still be able to keep up with the class only by reviewing the lecture slides posted. It is also recommended that students read the relevant material in the textbook before and after the lectures. Taking notes in the class is highly encouraged. Students are responsible for any missed announcements and assignments. Students who are not willing to regularly attend lectures should drop the class. Class participation will be used to evaluate marginal cases when final grades are computed (e.g. C+/B-). Be comfortable asking questions during lectures. If you don't understand something, then it is likely that others do not understand it either. They will be grateful to you for asking, so don't be afraid of "looking dumb" – ask!

Lectures will include iClicker response questions. Register to classquestion.com to earn extra credits/ attendance and participation points during the lecture (free for all students). How to Register? Click [here](#)! Please read before registering!

Communication: Students should check UBLearns regularly. Any information I need to communicate regarding the class or lecture will be posted there.

Office hours will be held by appointment. Students should also feel free to ask questions during, or after the lecture. Email correspondence should be reserved for scheduling office hours appointments or handling administrative matters related to the course. I will not answer questions about the course content (e.g., questions about lectures or homework assignments) by email. These questions should be asked in office hours or during lecture.

Homework Assignments: There will be six homework assignments. Each student will have their lowest homework grade dropped. Assignments must be submitted before the beginning of class (12:30 PM EST) on their due date. Late assignments will not be accepted unless a student provides proper documentation of a serious illness or family emergency. They should either be (a) typed or (b) neatly handwritten and then carefully scanned. (High-quality scanning is now possible with mobile phone apps. One good option is *Adobe Scan*, available for free for iOS and Android.) Please make sure the images are intelligible before you submit them. Assignments should be submitted as a single file (*not* separate files for each page). Students are encouraged to complete these assignments in small groups (of up to 3 students) and may submit a single copy for all group members (You can decide your own group). **[Dates to be announced in class]**

Midterms: There will be two midterm exams. These exams will be proctored in class. There will be no make-up exams. Students who fail to take an exam but can provide proper documentation of a serious illness or family emergency will have increased weight placed on the final exam score in the calculation of their course grade. Students must complete these exams individually. **[Dates to be announced in class]**

Final: The final exam will be offered at the time date provided by the registrar (**12/15/2022, Park 440, 11:45AM – 2:45PM**). This exam will be *cumulative*.

Grading Policy: The following are the weights given to assignments and exams:

Homework Assignments	20%
Midterm 1	25%
Midterm 2	25%
Final	30%

Grading Scale: Final grades will be assigned based on the following scale:

A 93%-100%	C+ 77%-79.9%
A- 90%-92.9%	C 70%-76.9%
B+ 87%-89.9%	D 60%-69.9%
B 83%-86.9%	F< 60%
B- 80%-82.9%	FX Failure for reason of non-attendance

In order to ensure that all students are treated equally, final grades will not be rounded. Hopefully, the blended traditional/specifications grading approach will remove the grade ambiguity that often accompanies rounding of final grades.

Incomplete Grades: Students should be familiar with the incomplete grade policies of the university (<https://catalog.buffalo.edu/policies/explanation.html>)

A grade of incomplete ("I") indicates that additional course work is required to fulfill the requirements of a given course. Students may only be given an "I" grade if they have a passing average in coursework that has been completed and have well-defined parameters to complete the course requirements that could result in a grade better than the default grade. An "I" grade may not be assigned to a student who did not attend the course.

Prior to the end of the semester, students must initiate the request for an "I" grade and receive the instructor's approval. Assignment of an "I" grade is at the discretion of the instructor.

The instructor must specify a default letter grade at the time the "I" grade is submitted. A default grade is the letter grade the student will receive if no additional coursework is completed and/or a grade change form is not filed by the instructor. "I" grades must be completed within 12 months. Individual instructors may set shorter time limits for removing an incomplete than the 12-month time limit. Upon assigning an "I" grade, the instructor shall provide the student specification, in writing or by electronic mail, of the requirements to be fulfilled, and shall file a copy with the appropriate departmental office.

Academic Honesty: Students should be familiar with the academic integrity policy of the university (<https://catalog.buffalo.edu/policies/integrity.html>)

Academic integrity is critical to the learning process. It is your responsibility as a student to complete your work in an honest fashion, upholding the expectations your individual instructors have for you in this regard. The goal is to ensure that you learn the content in your courses in accordance with UB's academic integrity principles, regardless of whether instruction is in-person or remote. Thank you for upholding your own personal integrity and ensuring UB's tradition of academic excellence.

Extra-Credit: I might give extra-credit opportunities to students based on the progress of the class. I will be providing the details later during the semester. Extra credit is given to the students for attending classes regularly and for class participation. So, both are highly encouraged.

COVID-19 Protocols:

- Stay tuned for the latest updates and news regarding the [UB Health and Safety Guidelines](#).
- Students, faculty, staff and visitors, regardless of vaccination status, are no longer required to wear masks in most settings, indoors or outdoors as per the UB Guidelines. Anyone who wishes to continue wearing a mask in a classroom, office or any other campus space is encouraged to do so.
- Any student who receives a positive COVID-19 test result should [isolate](#) and report it via [UB's confidential reporting form](#).
- If students need to miss class due to illness, isolation or quarantine, they must notify their instructor by email as soon as possible and no later than 24 hours after missing class.

- All campus community members who have regular on-campus contact and are not [up to date](#) with their COVID-19 vaccinations must continue to participate in weekly surveillance testing, including those with an approved medical or religious exemption.
- The university's [COVID-19 dashboard](#) will be updated daily to report new cases among UB students and employees.
- UB students, faculty and staff are reminded to [monitor their health](#) each day regardless of vaccination status, stay home if they are sick or develop symptoms of COVID-19 and get tested immediately, practice good hand hygiene and follow UB's [guidelines](#) on face coverings and other protocols.
- The [Erie County Department of Health](#) asks that anyone who tests positive for COVID-19 to [self-isolate](#), notify household members and other close contacts. If you are a close contact, you must follow the [CDC guidance for Quarantine and Isolation](#).

Classroom Conduct: The course's instructors are obliged to maintain classroom environments in which all students can learn. Therefore, the instructor will insist that students who indulge in persistent talking or other disruptive behaviors cease these behaviors upon request. Repetitive poor conduct by a student to conduct him or herself properly when requested to do so will result in that student's removal from the course.

Student Feedback: Every student in the course can and should participate in UB's secure and anonymous course assessment website. The data provided by student comments are used to enhance future offerings of the course. Students are welcome at any time to provide constructive suggestions for the course's improvement.

Accessibility Resources: If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources in 60 Capen Hall, 716-645-2608 and also the instructor of this course during the first week of class. The office will provide you with information and review appropriate arrangements for reasonable accommodations, which can be found on the web at:

(<https://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html>)

Critical Campus Resources: As a student, you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

Counseling Services: 120 Richmond Quad (North Campus), 716-645-2720 202

Michael Hall (South Campus), 716-829-5800

Health Services: Michael Hall (South Campus), 716-829-3316

Health Promotion: 114 Student Union (North Campus), 716-645-2837

Title IX Coordinator: 716-645-2266

Crisis Services Campus Advocate: 716-796-4399

UB Campus Police: 716-645-2222

Student Life Emergency Funds: <https://www.buffalo.edu/studentlife/help/emergency/emergency-funds.html>

Blue Table: <https://www.buffalo.edu/studentlife/help/emergency/food-support.html> (For students experiencing food insecurity).

Tentative Course Outline: Additional details will be posted on UBLearn.

Although the intention is to follow this schedule as closely as possible, there will be times when deviation will be necessary. Changes will be announced as early as possible so that students will be able to adjust their schedules accordingly. Due dates and the most accurate schedule of content will be posted to UBLearn.

The readings listed below are required. "K&O" refers to the course text. Page numbers for the text refer to the 2nd edition. Additional readings will be posted on UBLearn as the class progress.

I. Welfare Economics and Market Failures

A. Microeconomic Theory Review (~ 1 lecture)

K&O, Ch. 1, 2, and 4.

B. Market Failures: Externalities, Public Goods, Tragedy of the Commons (~ 2-3 lectures)

K&O, Ch. 5.

C. The Coase Theorem (~ 1 lecture)

K&O, Ch. 8 (pp. 139-43)

<https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/16/icymi-week-of-climate-action-from-the-biden-harris-administration/> (Inflation Reduction Act of 2022)

In News: <https://www.buffalo.edu/news/releases/2022/09/015.html>

(Kamala Harris visited UB on Sept. 14, 2022, to speak about the Inflation Reduction Act)

II. Pigouvian Policy – Part 1 (~ 2 lectures)

K&O, Ch. 8.

***** Midterm Exam I*****

III. Pigouvian Policy – Part 2 (~ 2 lectures)

K&O, Ch. 9-10.

Chan, Gabriel, et al. "The SO₂ allowance trading system and the Clean Air Act Amendments of 1990: reflections on twenty years of policy innovation." No. w17845. National Bureau of Economic Research, 2012. *(Optional)*

Tierney, John. "A tale of two fisheries." *New York Times Magazine* August 27, 2000. *(Optional)*

IV. Valuing Costs and Benefits of Environmental Policy

Arrow, K. J., Cropper, M. L., Eads, G. C., Hahn, R. W., Lester, B., Noll, R. G., Lave, L. B. (1996). Is There a Role for Benefit-Cost Analysis in Environmental, Health, Safety Regulation? *Science*, 272(5259), 221–222.

A. *Benefit-Cost Analysis and Introduction to Valuation Methods* (~ 2 lectures)

K&O Ch. 3

B. *Revealed and Stated Preference Methods of Non-market Valuation* (~ 2 lectures)

K&O Ch. 3

***** Midterm Exam II *****

V. Sustainability (~ 1 lecture)

K&O Ch. 11.

Solow, Robert., 1991. "Sustainability: an economist's perspective." (*Optional*)

VI. Global Climate Change (~ 2 lectures)

Covert, T., Greenstone, M. and Knittel, C.R., 2016. "Will we ever stop using fossil fuels?" *The Journal of Economic Perspectives*, 30(1), pp.117-137.

McKibben, Bill. "Global warming's terrifying new math." *Rolling Stone* 19.7 (2012): 2012.
(We will have an in-class discussion of this article during Week 15.)

***** Final Exam (12/15/2022- Park 440- 11:45AM - 2:45PM) *****