Course Content

The study of environmental economics is interesting, thought-provoking, and controversial. This is both a strength and a weakness; the strength is that the inherently interesting nature of the subject matter results in greater student interest and involvement than might be the case for many of the other fields in economics. The weakness, however, is that the emotionally-charged nature of the topic tends to lead to fuzzy thinking—indeed, there is ample evidence that this problem is not unique to the academic setting; many of the worst examples of government spending and legislation stemmed from perceptions of a "crisis," whether it is an energy crisis, a defense crisis, a health-care crisis, or whatever.

We begin with the application of basic economic and philosophical concepts to an understanding of the environment. This is followed by a relatively brief overview of environmental quality, of the major pollutants, and of how both are characterized. This is to give us a common environmental background. We then turn to an in depth treatment of how an understanding of economics can usefully guide the analysis of environmental quality. With this as background, it is possible to turn to a consideration of appropriate environmental policy. The focus is on applications vital to a voting citizenry and to those going on to work in any area of the environment. The ultimate goal for each student to think about environmental problems and policies in a more rational way after this course than he or she did prior to taking it.

Texts:
Bailey, Ronald (ed). The True State of the Planet, Free Press, 1995

There is considerable difficulty in finding an appropriate text for this course—the reasons are many: 1) most "environmental" textbooks have too little economic content to be useful, 2) most "economic" texts have as prerequisites more economic theory than is required for this course, and 3) many books are overly mathematical for the more policy-oriented approach that I wish to pursue. In spite of having discovered two useful texts, class attendance will be quite important, far more so than is usual at C.U. Getting notes if you must miss a class will be quite helpful, as I write most of the main concepts on the board, but those concepts will be illustrated with numerous verbal examples. All notes are not created equal—if you must miss, get somebody’s notes who is a good note-taker. The main text for the course is the Field book; The True State of the Planet is adopted largely to present a perspective that is entirely different from that likely to be encountered in any course at C.U.—it will also be sufficiently infuriating to many of you that it will stimulate research paper topics (another controversial, but interesting, book is Bast, Joseph L., Peter J. Hill, and Richard C. Rue’s Eco-Sanity, published by Madison Books in 1994—this will also stimulate paper topics).

Administrative Matters:
There will be one midterm (35%) and the final (50%) and a paper (to be discussed more fully in class) will comprise the remaining 15% of the grade. The length of the paper is not critical, but think in terms of 5-15 pages—it will be more fun for both of us if you pick a topic that you are particularly interested in. The test format, a mixture of subjective and objective
questions, will be discussed more fully in class (as will the paper). My office is in Economics 223 (Northwest corner, 2nd floor of the Economics Bldg) and office hours are on MWF at 2:00-2:30 and 4:00-4:30 and on Tues at 2:00-3:00 (and by appointment). The phone number is 492-7021, and there is a message machine.

Approximate Course Outline:

Week   Topic

1, 2   Overview and Introduction (The Market and When It Fails to Give Us What We Want): Doomsters vs. Boomsters and the natural resources and environmental implications; Logical matters of rationality; ordinary goods and environmental goods; efficiency versus equity (yachts and E.Q.); MSB = D? MSC = S?; Use of S's: "Values" (what the market does and broader issues of whether human marginal willingness-to-pay is "appropriate" even without external costs or benefits); externalities: public goods; the role of property rights and enforcement (endangered species, but also air, etc). (Chaps 1-4, Field; begin reading Bailey book)

3   An Environmental Background: Discharges and environmental quality; air (TSP, SO₂, HC, CO, NOₓ, Lead & the major polluters); water (BOD, DO, fecal coliform, pH, solids, hardness, conductivity, turbidity, salinity & the major polluters); other (hazardous substances, sources). (Class notes and much of the Bailey book)

4   Overview of an Interdisciplinary Approach to Environmental Analysis (5-Box Diagram) Costs of policy and impact on emissions; dispersion: benefits of policy (damage reduction); spatial adaptations in policy; incidence of policy (who is helped and hurt?). (Class notes, some of Chap. 5 Field)

5, 6   The Economic Theory of Environmental Quality The consumer optimum (excess pollution in the uncontrolled case, due to externalities); the firm optimum (excess pollution in the uncontrolled case, due to externalities); the law of conservation of matter and energy and the summation of individual emissions into the environmental quality we all consume; "social welfare functions" and implications in the environmental setting. (Class notes)

7   Interdisciplinary Approach (Boxes 1 & 2) Policy costs (add-on devices, input substitutions, spatial and temporal modifications, and input/output bans; higher costs or reduced quantities of other goods ultimately--TANSTAAFL) and the impact on discharges; going from discharges to environmental quality. (Class notes, Chap. 8 Field) (Midterm about here--midterm date is a "public good"--voting?)

8   Interdisciplinary Approach (Box 3) Three approaches to benefit estimation: 1) referenda, 2) survey/experimental, and 3) use of known relations between environmental and other goods). Sub-approaches of the last: 3a) sum of specific damages, 3b) hedonic approaches; philosophical issues again--the "statistical value of life" (review "values" and preferences over values). (Class notes, Chap. 7 Field)
9 Interdisciplinary Approach (Boxes 4 & 5)
The spatial dimension in environmental policy; local, regional and global damages. What are the equity implications of environmental policy as practiced in the U.S.? Why the poor pay a higher percentage of income in environmental cost and why the poor receive lower environmental benefits as a percentage of income (i.e. env. policy is regressive) (Class notes)

10,11 Benefit-Cost Analysis (certainty and uncertainty)
Ben Franklin quote: government failure; consumer and producer surplus; four approaches to project evaluation (and why "net present value" is to be preferred); B&C as S&D in disguise. Multi-attribute analysis. The rationality of discounting and the appropriate choice of discount rate.
(Class notes, Chap. 6 Field)

12 The Coase Theorem
Why there are not more environmental problems than there are--the Coase theorem: applications to the steel plant/laundry, to the reserve clause of baseball, and to water allocation.
(Class notes, Chap. 10 Field (portions)).

13 An Ecological Doomsday Model
An ecosystem: rabbits and foxes (simultaneous equations); An ecological background: The biologist/environmentalist versus the economist: notions of assimilative capacity, environmental damages may be "optimal" (i.e. externalities can be internalized, but with remaining environmental damage), and the "downward spiral" of ever-worsening condition of both the economic and environmental systems! Relevance of the model and possible offsets.
(Class notes)

14 Policy Analysis--What Does Economic Theory Suggest?
Criteria for evaluation of policy; Coase and moral suasion (decentralized approaches); Command-and-control strategies (standards, required equipment); Incentive-based approaches (taxes, subsidies, salable emission rights (handout))
(Class notes, Chaps 9-13 Field)

15 Actual U.S. Policy
Water pollution control policies; Air pollution control policies; Toxic and Hazardous substance policy; miscellaneous related issues
(Class notes (brief--fairly boring material), Chaps. 14-17 Field)

16 Miscellaneous Topics
International environmental responsibility (foreign, alternative economic system, global); baby certificates and pollution permits; the carrying capacity of a wilderness area; fisheries economics and rain forest issues
(Class notes, Chaps. 18-21 Field, some of the Bailey book)

17 Epilog--Do You Expect The Future To Be "Better"?
Alternative views of the future. Population and income growth--are they good or bad? The "boomsters" versus the "doomsters"--and the Simon/Ehrlich bet; intergenerational equity; summary and review
(Final Exam DEC. 15, 11:30 A.M-2:30 P.M.--Good Luck!)