2015

ECON 320-01-02 Natural Resource, Ecological, and Environmental Economics

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“We urgently need a humanism capable of bringing together the different fields of knowledge, including economics, in the service of a more integral and integrating vision. Today, the analysis of environmental problems cannot be separated from the analysis of human, family, work related and urban contexts, nor from how individuals relate to themselves, which leads in turn to how they relate to others and to the environment.” (Pope Francis, *Laudato Si’,* #141)

"Seemingly efficient allocation of each resource individually will not necessarily lead to the efficient allocation of all resources together...." (Daly, p. 231)

“[B]oth ecological economics and environmental economics provide a basis... for helping to identify the circumstances that degrade the environment...This understanding can then be used as the basis for designing new incentives that harmonize the relationship between the economy and the environment.” (Tietenberg and Lewis, p. 6)

“We make the world by the questions we ask.” (Physicist John Wheeler)

"Plant a tree." (E.F. Schumacher's response to a request for strictly political advice based on his economic and social insights)

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Office Hours: TR 9:15-10, 12:45-2:15 PM and by appointment

*PLEASE give name, course and section number in all e-mails and voicemails.*

Dept. Assistant: Jeanne Sanker, 318A Smith Hall
M-F 9 AM – 5 PM (lunch 12-1)
Phone/Voicemail: 745-3064
E-mail: sanker@xavier.edu

**CANVAS:**
This course requires access to Canvas. Please address all Canvas access questions to the help desk: 745-HELP as I am unable to assist with this.

**TEXTS:**
3. Other readings as assigned. These will often be found on my website (under ECON 320/Readings & Links), [http://bertaux.wordpress.com/](http://bertaux.wordpress.com/)

**PRE-REQUISITES:** ECON 200 and/or 201, Principles of Micro and Macroeconomics, respectively. If you have not had 200 (or your knowledge is rusty), please thoroughly review Ch 8 & 9 in DF within
the first two weeks of the semester.

COURSE OBJECTIVES:
Note: this course is:
1) a 300-level elective for an Economics major (ECON BA or BSBA) or Economics minor
2) a required course for:
   o a BA in Economics, Sustainability & Society (ECOS)
   o a BSBA in Sustainability: Economics and Management (SUST)
   o a BS in Environmental Science (ENSC)
   o a BA in Land, Farming & Community (LAND)
   o an Environmental Studies minor
3) a 4th course ER/S elective in Xavier’s Ethics/Religion and Society focus (part of the
   University core curriculum)

Natural resource economics is an interdisciplinary field of economics aimed at addressing the
relationships between human economies and natural ecosystems. Its main concern is the study of
how an economy operates within the ecological constraints of the earth's natural resources. In
examining these issues, this course will introduce the interconnected fields and models of ecological
economics and environmental economics, both being subfields of economics concerned with
theoretical and applied environmental issues. While the fields intersect extensively, environmental
economics generally uses neoclassical analysis to focus on efficiency issues related to
environmental problems, and ecological economics emphasizes the economy as a subsystem of the
ecosystem, as well as the need to preserve irreplaceable natural capital.

You will be required to complete assignments (including reading and problem-solving) before class,
since we will be discussing and analyzing ideas from the readings. In addition to study and
discussion of texts, we will utilize project-based learning and writing assignments. In a course
focused on ecological and environmental economics, it is essential for students to get hands on
applying these ideas to real problems, so there will be some required guest speakers and field trips.

Learning objectives:
- relate our decisions and actions as economic actors at a variety of levels (individual,
  community, national, global) to environmental quality
- contrast questions of scale with questions of efficiency
- consider the economy's utilization of different types of natural resources (biotic and abiotic;
  stock-flow and fund-service; renewable, congestible, and nonrenewable)
- describe and understand ecosystem services and waste absorption issues
- understand and apply basic concepts of marginal extraction and external costs,
  excludability, rivalry, public vs. private goods, and open access regimes
- recognize and analyze examples of market failure (eg, externalities such as climate
  change, water and air pollution, and solid waste; non-excludable/non-rival goods; distribution issues)
- evaluate environmental policies' impacts on welfare of future generations (eg,
  substitutability of natural and human-made capital, morality of discounting the future)
- distinguish between the intrinsic value of natural resources and ecosystems to the
  economic value humans assign to them
- consider property rights in the context of the need to protect natural resource levels
- distinguish impact of environmental factors on benefit-cost analysis
- improve skills through project work, spreadsheeting, writing, discussion and analysis of
  texts

DISTRACTING ACTIVITIES/DEVICES:
Please note that the following activities during class are distracting and disrespectful to the professor
and to fellow students, and will negatively impact your grade:
- receiving or making phone calls or texts
- non-class computer or smartphone activity
- side conversations, etc.

Phone should be off during class, and, unless requested by the professor, use of a laptop, ipad, etc. during class is restricted to students for whom this is recommended in writing by the Learning Assistance Center.

**GRADING:**

Final grades will be assigned as follows:

1. Two Exams (25% each; essay, short answer and/or problem-solving in format; on required readings and lectures) 50%
2. Assignments (problems, writing/other) & in-class activities 25%
3. Final Paper/Group Project & Presentation 25%

Your written contribution can be a research paper with scholarly sources and bibliography that directly contributes to the group project, or can consist of a written report that documents your project-related activities and/or results.

4. Borderline grades will be assigned by assessing quality of class participation.
5. Up to 4 approved, extra credit reaction papers, based on attendance at sustainability related events and lectures, can earn up to a total of 2% of total course points. Paper should be a reflection essay of at least 3 substantive paragraphs and should make explicit links to our readings and/or class discussions.

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**Notes:**

1. **Academic dishonesty** will not be tolerated; any work not your own should be properly cited (see University catalog, may result in failure for course and/or expulsion from University).
2. **Failure to take an exam** will result in a “0” grade. **Prior** permission must be obtained from the instructor for missing exams. Makeup exams are not generally given; in the event of an excused absence from an exam, the cumulative final exam may be given double weight in the student’s final grade.
3. **Late assignments** that are not pre-approved will be marked down significantly and will not be accepted after one week without a doctor’s note indicating a significant medical issue.

**FINAL PAPERS & GROUP PROJECTS:**
These should follow guidelines provided separately.

**COURSE SCHEDULE:** (Tentative; if you miss a class, please contact another student to confirm the next class assignment, changes in due dates, and so on):

**Week 1 8/25, 27** Introduction to course, overview of natural resource challenges and policy, efficient allocation, just distribution, optimal scale, growth v. development
Reading:
DF, "Introduction"
Ch 1 DF, "Why Study Economics?"
Bring in & post creative item

Additional sources:
Ch 1 TL, "Visions of the Future"
McKibben, Eaarth, Ch. 1, excerpt, pp. 1-27, "A New World"
Juliet Schor, Plenitude (2010), Ch. 2, "From Consumer Boom to Ecological Bust," pp. 25-65
McKibben, Eaarth, Ch. 1, excerpt, pp. 27-46, "A New World"

Week 2 9/1, 3 Overview: environmental, ecological and natural resource economics,
benefit-cost analysis, discount rate, Pareto optimality, static v. dynamic efficiency,
uneconomic growth, throughput

Reading:
Ch 2 DF, "The Fundamental Vision"

Additional sources:
Herman Daly 2010 Keynote Pt. 1, http://www.youtube.com/watch?v=l8k2Tnya_jE&feature=related
(5 min.)
Juliet Schor, Plenitude (2010), Ch. 3, "Economics Confronts the Earth," pp. 67-97

Week 3 9/8, 10 Basic concepts for the ecosystem and the economy: laws of
thermodynamics, stock-flow and fund-service resources, excludability and rivalry
of goods and services

Reading:
Ch 4 DF, "The Nature of Resources and the Resources of Nature"
Kenneth Boulding, "The Earth as a Spaceship," 5/10/1965
Where I'm From Assignment

* 9/14, 3-4:30 PM Campus Sustainability Day, Speaker Benjamin Barber, author of
Consumed (class re-scheduled from 10/6)

Week 4 9/15, 17 Intro to Intertemporal Discounting

Reading:
Ch 2 TL "Valuing the Environment: Concepts" (Handout)
Problem Set: Discounting

Week 5 9/22, 24 Methods, use value, option value, nonuse value, valuation of
human life, Benefit Cost Analysis (BCA), Cost Effectiveness Analysis (CEA)

Reading:
Ch 3 TL, pp. 35-37, 46-49, 53-59 only (Handout), "Valuing the Environment: Methods"
Exercise, Survey Methods
Week 6 Exam 1, 9/29

Week 6 and 7  10/1, 13  Abiotic resources and economics: fossil fuels, minerals, land, and solar energy: nonrenewables, recyclables, indestructibles

Reading:
Ch 5 DF, "Abiotic Resources"

Additional sources:

10/6  Class does not meet (re-scheduled to 9/14 for speaker); room available for Project Meetings

Fall Holiday 10/8-9

Week 7 and 8  10/15, 20, 22  Biotic Resources: ecosystem services, maximum sustainable yield, waste absorption capacity

Reading:
Ch 6 DF, "Biotic Resources"

Paper topic paragraph due, Feb. 24
Problem Set: Sustainable Yield

Week 9  10/27,29  Limits to growth? Is growth distinct from development?

Reading:
Ch 7 DF, "From Empty World to Full World"

Additional sources:
E F Schumacher, Small is Beautiful: Economics as if People Mattered (1973), Pt I, Ch 3, "The Role of Economics" and Ch 4, "Buddhist Economics"

Weeks 10 and 11  11/3, 5, 10,12  Market Failures and the Environment: nonexcludable and/or nonrival goods, public goods, congestible goods, property rights, open access regimes ("tragedy of the commons"), externalities, Coase theorem, transaction costs, imperfect markets, rent seeking, scarcity rent

Reading:
(Review all of Ch 8 & 9 DF if necessary)
Ch 10 DF, "Market Failures"
Ch 4 TL, "Property Rights, Externalities, and Environmental Problems" (Handout)

*Mon. Nov. 16: Guest Speaker Mark Anielski, 7-8:45 PM, Pope Francis New Encyclical and Consumption Justice
Reading:
Chapter from Anielski, *Economics of Happiness*

**Week 12 Human behavior, economics, ecology, and the pursuit of happiness**

Reading:
Ch 13 DF, "Human Behavior and Economics"

*Additional sources:*

**Week 13 Exam 2, 12/1**
Workshop on Papers 12/3

**Week 14 12/8, 10**
Workshop for Project Presentations

**12/14 Study Day**

**Week 15 12/15, 17**
**FINAL EXAM PERIOD:** (PROJECT presentations)
Section 1 (10 AM): 8:30-10:20 AM, Thurs., Dec. 17
Section 2 (11:30 AM): 10:30 AM-12:20 PM, Tues., Dec. 15

*Required events, you must see Prof. Bertaux if you have a conflict

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“We educate students of business, enabling them to improve organizations and society, consistent with the Jesuit tradition.”
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