

AREC 340—HONR Fall Semester 2014

Natural Resources and the Economy

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Class time and location: 11 am MWF, Engineering B 105

Course Description:

Natural resource economics studies the relationship between the economy and the resources it depends upon. Human economic activity has had a profound impact on the world's natural resource base while at the same time natural resources have provided human societies with an immense source of wealth. Understanding this interface requires a working knowledge of both natural and human systems and how one relates to the other. This course will provide a theoretical foundation for evaluating the economic incentives that natural resource users face. We will discuss the reasons that natural resources are often overused in practice.

Using this theoretical base, we will present policies that can alter incentives to harvest natural resources with the goal of achieving sustainable and efficient resource management. Importantly, we will analyze the distribution of natural resource wealth across different members of society and across time.

Students will use the theory presented to examine real-world natural resource issues related to land-use, non-renewable resources (e.g., oil, minerals), renewable resources (e.g., fish, forests, wildlife, and water), and climate change. Throughout the course, students will present and debate current issues in natural resource economics.

Course Objectives:

- Develop the ability to apply economic concepts to real-world natural resource contexts; this includes identifying costs and benefits of resource use, market failures, and potential solutions
- Learn to communicate analytical results in a clear way, both written and orally.
- Facilitate an open discussion of natural resource issues and potential solutions
- Recognize the costs and benefits of market-oriented management policies

Required Reading:

This class will use the following required textbook:

Field, B.C. *Natural Resource Economics: An Introduction*, 2nd Edition. Waveland Press. 2008.

One textbook does not capture all the relevant issues for natural resource economics so there will be supplemental papers posted on **RamCT** (listed in the class schedule in the syllabus).

For a slightly more advanced treatment of natural resource economics, I recommend:

Hartwick, John M. and Nancy D. Olewiler, *The Economics of Natural Resource Use*, Addison-Wesley Educational Publishers, 1998.

Conrad, Jon M. *Resource Economics*. Cambridge University Press, 1999.

Assignments:

This course has 4 types of assignments. Details of each assignment will be handed out in class.

1. Short assignments (6)—short assignments will develop your understanding of the concepts presented in class. These can be done in groups of 2. My goal is to make these as practical as possible, with the use of real resource contexts and data. You will use Excel, applied math, and write short papers (<5 pages).
2. Reports (2)—For the first report (10 pages), I will assign one policy-relevant natural resource issue that students will analyze by developing a mathematical and/or graphical model of the problem, defining the market failure(s), and proposing at least 2 policy solutions. Costs and benefits of the policies should be compared.
For the second report (10 pages), students will receive a real-world policy proposal and provide a detailed benefit-cost analysis, written for a decision-maker. Writing quality will count for both reports.

3. Presentations (and write-ups, 2 per student)—approximately every week starting in week 4, a student will present an applied natural resource issue relevant to the topic area of the week. A 20-30 minute presentation of a resource problem, its causes, proposed solutions and their costs and benefits will be followed by class discussion on the preferred policy solution. A 2-page (double-spaced) report that complements the presentation should be handed in the day of a presentation.
4. Debates (2)—we will debate two issues in the class. I will randomly assign people to a side and you will research the topic and defend your assigned view point. The topics will include:
 - a. Climate change mitigation: immediate action or wait?
 - b. Private or common property?

Class participation:

I expect everyone to show up prepared for discussion in class. A large part of this class should be participatory and to incentivize this, part of your grade will reflect your participation in class. A participation grade will be assigned every three weeks of class so that you have regular feedback on this portion of your grade.

Exams:

There will be an in-class mid-term and final. These are designed to ensure that you are getting the appropriate concepts from the class. The mid-term provides me with an opportunity to gauge individual understanding and provide constructive feedback while the final is designed to test your ability to pull concepts together from the whole semester.

Grading:

6 short assignments (15% total)

2 reports (10% each)

1-2 presentation(s) (10%)

2 debates (10% each)

Participation (10%)

Mid-term exam (10%)

Final exam (15%)

Grade Distribution:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

Late Assignments Policy:

I will only accept late assignments if you are approved for an excused absence on the due date. The late assignment will be due the next day of class. Assignments are due in class. Email assignments will not be accepted unless prior arrangements have been made.

Absence Policy:

I understand that my class is not the only thing going on in your life. Therefore, I have no limit on excused absences but for every absence, you must present a half-page (max) write-up describing the costs and benefits weighed in making the decision to miss class (and of course, the work must be made up). If your argument is not convincing, it will count as an unexcused absence. Your total participation grade will fall by 10% for every unexcused absence.

Cell Phone and Computer Policy:

In general cell phones should be off or on silent during class. If a cell phone rings more than once, you will be asked to leave. Participation and discussion play a large role in this class and so texting during class is not permitted.

While laptops can be helpful for presentations they are discouraged for everyday class use because they tend to distract and disengage students. Taking notes on a computer is allowed but if used inappropriately, total participation grades will be reduced.

Honor Code:

This course will adhere to the Academic Integrity Policy of the Colorado State University General Catalog {Page 7} and the Student Conduct Code. Honors students enrolled in this course are held to high standards of integrity. Academic integrity is expected within all assignments for this course.

It is expected that students will use their own knowledge and skill for assignments unless directed to do otherwise. Incidents of cheating, plagiarism or knowingly providing false or incorrect information are considered serious and will be treated seriously. Consequences of these incidents are at the discretion of the faculty member involved and may consist of confiscation of assignments, an F grade, or reporting to the CSU Student Conduct office.

Honors Competencies and Skills for Honors Studies (“PICC” feedback)

The CSU University Honors Program has prioritized four general competencies skills that should be addressed in each honors course (including HONR 192, 193, 392, and 492). These skills include (1) **Professionalism**, interpersonal skills, and emotional intelligence; (2) **Interdisciplinary learning** integrated with global and/or cultural viewpoints; (3) **Critical thinking**; and (4) **Creativity and problem solving**. This is a two-stage process. First students will complete a self-evaluation of these skills at the beginning of the semester (week 1 or 2). At the end of the semester (week 16) instructors will provide feedback on individual student progress towards these competencies. The feedback is part of the University Honors Program; it is for advising purposes only and is confidential. It is not part of a student’s grades or academic record. A standardized rubric (see below) is used to provide feedback for growth in these areas and to measure the Honors Programs progress in helping students to develop these skills through their academic career. The feedback categories and activities/assignments used to measure progress in AREC 340--HONR – Natural Resources and the Economy are listed below and noted in the assignment descriptions.

Skill Category (PICC)	Relevant Course Activities & Assignments
<i>1. Professionalism, interpersonal skills, & emotional intelligence</i>	<ul style="list-style-type: none">• Class participation• Debate conduct• Oral presentation• Discussion leadership

2. Interdisciplinary learning integrated with global &/or cultural viewpoints	<ul style="list-style-type: none"> • Short assignments • Midterm exam • Final exam • Oral presentation • Reports • Debates
3. Critical thinking	<ul style="list-style-type: none"> • Discussion of readings • Debate • Final Exam • Reports • Oral presentation • Discussion leadership
4. Creativity & problem solving	<ul style="list-style-type: none"> • Oral presentation • Short assignments • Midterm exam • Final exam • Discussion leadership

Topic Outline:

1. Introduction to natural resource economics, some history
2. Model mechanics: supply, (derived) demand, discounting
3. Cost-benefit analysis
4. Identification of causality
5. Land
6. Non-renewable resource
7. Forestry
8. Fishery
9. Natural resources in developing countries
10. Water
11. Ecosystem services and non-use values
12. Climate change, the Green Paradox

Course Schedule (Tentative):

Each week will begin with a presentation of theory and examples by me, followed by a discussion of relevant reading and a presentation given by a student, except during the weeks of the mid-term and the debates.

Week of:	Theoretical topic	Student presentation	Assignment(s) due on Wednesday	Readings
August 25 th	Introductions, history of resources and the economy from Malthus on, economics review	n/a	n/a	What is Conservation?
September 1 st	Cost-benefit analysis, identification	n/a	Short assignment #1	-Mostly Harmless Econometrics, An Empiricist's Companion, Angrist and Pischke— chapters 1 and 2 -cost benefit -voyage of Columbus
September 8 th	Land economics, resource rent	n/a	Short assignment #2	Tragedy of the Commons, Hardin
September 15 th	Non-renewable resources— dynamic models	Land use	Short assignment #3	Economic Value of Shale Partridge Report FINAL Dec 2011
September 22 nd	NR resources— fuel transitions, sustainability, and substitutability	Non-renewable resource	Short assignment #4	Betting on the Planet
September 29 th	Forestry economics—forest age, rotations	NR resource or forestry	Work on report	Samuelson 1976
October 6 th	Forestry economics—non-timber values, US forestry history (guest presentation from USFS employee?)	Forestry	Report #1	Tale of Two Fisheries
October 13 th	Fisheries economics— market failures	Fisheries	Study for mid-term	Tale of Two Fisheries, Tierney
October 20 th	Fisheries economics— policies in theory and practice	n/a	Mid-term (Friday)	Economic incentives, fisheries
October 27 th	Natural resources in developing countries, mid-term review	Community resource management	Prepare debates	Ostrom— Science article

Week of:	Theoretical topic	Student presentation	Assignment(s) due on Wednesday	Readings
November 3 rd	Natural resources in developing countries	n/a	Debate #1	Is the Rent Collector Worthy of his Full Hire?, Samuelson, 1974
November 10 th	Water economics (Field trip to ditch company or guest lecture?)	Water issue	Debate #2	Economic conception of water
November 17 th	Ecosystem services and non-use values—measurement and modeling	Water/non-consumptive resource values	Short assignment #5	Resource scarcity, Economics endangered species
November 24 th	Thanksgiving break	Thanksgiving break	Thanksgiving break	Thanksgiving break
December 1 st	Climate change—defining the problem	Climate change policy—mitigation	Short assignment #6	The ethics of climate change
December 8 th	Green paradox and policy solutions	Climate change policy—adaptation	Final Report	-Sinn-Green Paradox -Osterle-Green Paradox
December 15 th	Final exam Time: TBA Place: TBA			The Lorax

PICC Feedback Rubric

Assessment Category	Mastered	Proficient	Developing	Basic
<p>1. Critical thinking: Student advances a position with specific theses or hypotheses & can conceptualize ideas or lines of thought. Conclusions and related outcomes acknowledge complexities of an issue (implications and consequences) and recognize differing points of view. Formulates & develops claims with sufficient support, including reasoning, evidence, & persuasive appeals, & proper attribution where necessary. Uses written and oral communication effectively in persuasive arguments.</p>	<p>Position is imaginative & takes into account the complexities of an issue. Limits of position are acknowledged & others' points of view are synthesized within position. Conclusions &/or outcomes are logical & reflect student's informed evaluation & ability to place evidence & perspectives discussed in priority order. Formulates & develops insightful claims with compelling reasoning, evidence, & persuasive appeals, using professional standards of attribution. Highly effective use of written and oral communication in persuasive arguments.</p>	<p>Position takes into account complexities of an issue; others' points of view are acknowledged. Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences & implications) are identified clearly. Formulates clear & coherent claims either directly (thesis statements) or indirectly, with sufficient reasoning & evidence, & with proper attribution where necessary. Effective use of written and oral communication in persuasive arguments.</p>	<p>Position acknowledges different sides of an issue. Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences & implications) are identified clearly. Identifies & appraises support provided for claims made by writers &/or speakers; understands conventions used in proper attribution. Adequate use of written and oral communication in persuasive arguments.</p>	<p>Position is stated, but is simplistic & obvious. Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences & implications) are oversimplified & not well developed. Identifies & understands claims made either directly (thesis statements) or indirectly by writers &/or speakers. Basic written and oral communication skills used in persuasive arguments.</p>
<p>2. Interdisciplinary learning integrated with global &/or cultural viewpoints: Integrates diverse knowledge, perspectives, &/or skills into arguments &/or strategies; is aware of and can clearly incorporate global &/or cultural perspectives to an argument or issue.</p>	<p>Independently creates whole arguments or strategies out of multiple parts (synthesizes) or draws conclusions by combining examples, facts, or theories from more than one field of study or disciplinary perspective & from a global or cultural perspective.</p>	<p>Independently connects examples, facts, or theories from more than one field of study or perspective in developing an argument or strategy. Provides a global or cultural perspective, but lacks sophistication or nuance.</p>	<p>When prompted, connects examples, facts, or theories from more than one field of study or perspective in an assignment aimed at argumentation. When prompted, can provide an appropriate global or cultural perspective to an argument or issue, but it may be oversimplified.</p>	<p>When prompted, connects examples, facts, or theories from more than one field of study or perspective as part of an argumentative work. Has only a basic or naïve understanding of global & cultural perspectives regarding a particular argument or issue.</p>

<p>3. Creativity & problem solving: Creatively applies discipline-based and/or cross-discipline-based knowledge to discover and design a variety of forms often using a problem-solving strategy.</p>	<p>The formation process reflects comprehensive & sophisticated familiarity with the discipline(s) & is well thought out, complex, & very applicable. Fully engaged in the creative process by designing a format for a project as a response to flexible guidelines & goals.</p>	<p>The formation process is adequate for the task, reflected by sufficient familiarity with the discipline(s), & is applicable & useful. Begins to experience the creative process by constructing a project within specific parameters for format & content.</p>	<p>The formation process is somewhat inadequate for the task, revealed gaps in knowledge central to the discipline(s), or is marginally applicable or useful. Encourages others to interact creatively by offering imaginative ideas in a group setting.</p>	<p>The formation process is clearly inadequate for the task, large gaps in knowledge central to the discipline is apparent, or is not applicable or useful. Demonstrates a creative approach by finding quick, clever solutions in class discussions & assignments.</p>
<p>4. Professionalism, interpersonal skills, & emotional intelligence: Acts ethically & positively to foster a supportive instructional or work environment. Has the emotional intelligence (ability to perceive, evaluate, & manage emotions) & interpersonal skills to work effectively with others.</p>	<p>Seeks consensus with others with differing points of view. Sees new & alternative options. Can handle complexity & ambiguity. Helps the group/class move forward by articulating the merits of alternative ideas or proposals. Resolves conflict in a way that strengthens group cohesiveness. Can manage & respond to emotions in a constructive way. Can put aside biases to relate to others.</p>	<p>Supports & assists in building consensus with others with differing points of view. Offers alternative solutions or courses of action that build on the ideas of others. Identifies & acknowledges conflict & stays engaged with it. Understands the meaning of emotions in others, but may not know how best to manage them. Aware of biases, but makes an effort to relate to others.</p>	<p>Mediates disagreements & understands other perspectives. Offers new suggestions to advance the work of the group or class. Redirects conflict toward task at hand. Understands how emotions promote thinking & cognitive activity; can interpret emotions, but does not always know the best way to respond. Aware of biases, but makes no effort to relate to others.</p>	<p>Can articulate wants & needs and participates in class discussions. Thinks dichotomously (black & white). Shares ideas but does not advance the work of the group or class. Avoids conflict; passively accepts alternate opinions. Perceives emotions in others, but cannot effectively interpret & respond to those emotions; lacks sympathy. Unaware of biases that affect how student relates to others.</p>