

V643:
Natural Resource Management and Policy
Indiana University
School of Public and Environmental Affairs
August 30, 2008

Instructor: Eric Coleman	Fall 2008—Section 13015
Office: 515 N. Park (Park 2)	Monday, Wednesday: 2:30–3:45 pm
Phone: 855-8566	Classroom: PV 272
Email: eracolem@indiana.edu	Office Hours: M, W: 4:00–5:00 pm or by appointment (via e-mail)

1 Course Description

From the IU Graduate course bulletin: *This course evaluates a broad range of contemporary resource policies, cases, and controversies, using bioeconomic resource management models as an intuitive aid, wherever possible. Topics include fishery management, forestry policy, tropical deforestation, water management policy, nature preservation/endangered species, sustainable development, and national income accounting.*

This is not a course in statistics, policy analysis, nor resource economics; however, elements from all three will be used.¹ You will apply the methodological skills already acquired in statistics and policy analysis to problems of natural resource management. We will fill in substantive knowledge of natural resource economics along the way.

To this end, this course has some important objectives:

- To expose you to a broad range of natural resource policy issues and some policy instruments to address them.
- To teach you to apply tools of policy analysis to assess the efficacy, costs, and benefits of different policies.
- To help you appreciate generalizable principles that hold true across many applications in natural resources policy, and the exceptions to those principles.

Thus, by the end of the semester, you should have a broad introduction to the literature on natural resource policy. You should further be able to demonstrate the skills requisite to evaluate the efficacy of policy instruments in particular cases.

¹You probably already have the most exposure to statistics and policy analysis, so we will focus the most on resource economics.

2 Prerequisites

You are expected to achieve a general understanding of many concepts, principles, and techniques. Some facility with statistics, policy analysis, and resource economics will help greatly. At the least, you should have taken V517 Public Management Economics or a similar intermediate applied public microeconomics or public managerial economics course, and basic statistics either V506/507 or their equivalents. You should have experience with a statistical package from such a course, and at a bare minimum know how to do simple regression in Excel. I will use Stata and R in examples throughout the course.

To succeed in this course you will need a strong understanding of basic microeconomic principles and facility interpreting graphs. Assignment 1 (see below) is intended to help you establish that you have these skills. You should have strong algebra skills, preferably the ability to do simple derivatives and integrals, and tenacity to solve complex problems.

3 Readings

This course is organized such that we will spend the first days of a topic with a broad introduction from the texts; application of textbook analysis will then be examined in specific cases studies (usually from papers published in a scientific journals). Therefore, you will need to read both book chapters and journal articles (posted to the oncourse site) before class. Please print out and bring journal articles (with notes) to class. You will need to purchase the following textbook:

Hackett, Steven C. 2006. *Environmental and Natural Resources Economics: Theory, Policy, and the Sustainable Society*. New York: M.E. Sharpe. [ISBN: 9780765614728](#)

I have tried to make the reading load low on days that assignments or other work is due; the workload is substantial, but it should not be overwhelming. As is the case with most graduate courses, we will not have time to cover every detail of every reading; however, the time you put into the readings will directly reflect how much you learn. The readings are meant as a bare-minimum introduction. If you hope to do research or otherwise have a career in natural resources policy, it will be worth your time and effort to do the readings.

4 Grading

The following will compromise your grade in this course:

Item	% of Grade
Professionalism	5
Assignments	35
Policy Analysis Paper	25
Policy Analysis Presentation	5
Policy Analysis Discussant Memo	5
Final Exam	25

4.1 Professionalism

Professionalism means attending class, participating in class discussions, and acting professional (i.e. respectful) towards your colleagues, including your fellow classmates and the instructor. Unprofessional behavior will result in losing five percent of your final grade.

4.2 Assignments

Every few weeks you will be assigned a problem set or be directed to analyze data according to the topics we are covering in class. Each of these assignments is listed in the schedule below. **LATE ASSIGNMENTS: YOUR GRADE ON LATE ASSIGNMENTS WILL BE REDUCED BY 10 PERCENTAGE POINTS EACH DAY (NOT EACH CLASS PERIOD, EACH DAY!) THAT IT IS LATE.** If you cannot be in class to hand in an assignment, you need to make arrangements with a classmate to hand in the assignment for you or contact me and hand it in early. You have plenty of notification to make such arrangements. There are four assignments; the first assignment is worth 5% of your final grade and the final three are each worth 10% of your final grade.

4.3 Policy Analysis Paper

Each of you will write a natural resource management or policy analysis paper on a subject of your choice. Where possible you should choose a topic which provides opportunities to expand or supplement your career focus area. You may, although you are not required, work in groups of two or three students for this paper. However, such groups will need to indicate each person's role in the project and I will later give supplemental instructions to ensure equal participation in the project.

- The final paper is preceded by a one or two page paper outline which must be approved before the final paper will be accepted. (Repeat submissions of the corrected outline will often be necessary.) The due date for this outline is indicated in the class schedule.
- Students are encouraged to consult with the instructor prior to beginning the paper outline for appropriateness of topic and approach.
- There is no minimum paper length, but the maximum length, excluding title page, bibliography, and appendix, is 12 pages double spaced with a font of 11 point or above.

In addition to the written paper, you will briefly present your results in an oral presentation. This serves two important functions: first, it gives you experience communicating your ideas and technical information to your peers, something you will almost assuredly do in your future career; second, it is an opportunity for feedback to help improve your analysis. However, because we only have three class periods to review these presentations, each of you will be limited to a very short (5-10 minute) presentation. Feedback on your paper will thus be supplemented with a policy analysis discussant memo from one of your colleagues, and you, in turn, will write one for them.

More detailed instructions on writing the paper, paper presentation, and the role of discussants will be provided later. However, note that the final paper should have the following features:

- It must be relevant to natural resource economics and policy.
- It must identify and answer a specific research question of manageable scope.
- It must involve the collection and analysis of data.

- You must interview expert(s) in the area you are studying (e.g. if you are interested in water-use, you could interview farmers, water managers, and/or city planners).

The second item here, that the research question answer a specific question of manageable scope, is perhaps the most difficult requirement for beginning researchers. A topic such as a “review of sustainable development” is completely unrealistic. There is simply too much research here. Even studying sustainable development in Columbia is unrealistic. When you doubt the specificity of your topic you will 99% of the time have too broad a topic. The following are some examples of appropriately narrow topics:

- Is water in Bloomington efficiently priced?
- What determines whether cities participate in the Tree City USA program?
- Does the presence of NGOs improve local biodiversity efforts in Bolivia? What types of NGOs and what types of NGO actions are most effective?
- What types of sanctions (monetary fines, social shaming, or positive incentives) are most likely to encourage conservation of common pool resources?
- What will be the economic consequences of opening the Arctic National Wildlife Refuge to drilling?
- How has decentralization impacted forests in Uganda?
- What incentives do different actors face in prior appropriation and riparian surface water law regimes? What does this imply for differences in outcomes across these institutions?
- Do state-manage forests outperform (according to ecological outcomes, revenue generation, or sustainable harvesting) federally-managed forests? Privately-managed forests?

4.4 Final Exam

The final examination is comprehensive and will be a take home exam. You may work with other students on the exam, but your answers must be your own. These exams should be typed and follow the length guidelines provided in the exam instructions.

5 Office Hours

You’ll notice that I’ve scheduled only a few formal office hours during the week. It seems that no matter when I schedule office hours, students almost always have conflicts either with jobs or other classes. As a result, I’ve found that the easiest way to meet with students is to find times that are mutually convenient. You are welcome and encouraged to come in during office hours, but you are also welcome and encouraged to contact me via e-mail to set up a convenient time to meet outside of formal office hours. Also note that my primary office is not at SPEA, but at the Workshop in Political Theory and Policy Analysis on the west side of campus at Park Ave.

6 Course Policies

We will follow the standard, university-wide academic policies for dishonesty, civility, withdrawals, grading, etc. If you have a question on what is appropriate conduct, please refer to the [Indiana University Code of Student Rights, Responsibilities, and Conduct](#) for detailed information. I will not tolerate academic misconduct of any kind.

I do not require a specific citation style for papers; you should use a style you can use consistently and comfortably (e.g. APA or Chicago).

If you have a disability that requires my attention, please contact me as soon as possible so that we can make accommodations for your needs.

7 Doctoral Students

The purpose of good doctoral instruction is threefold: (1) introduction to the literature; (2) learning the craft of research; and (3) prepare for qualifying examinations. I believe the outlined course will provide an appropriate introduction to the literature; however, we need to carefully address the other two purposes as well.

To this end, the final paper which you submit will have a maximum page requirement of 25 pages (including all graphs, tables, charts, etc.) and should be a rough draft of a paper you could submit to a peer reviewed journal or a dissertation chapter. Thus, you need to quickly identify an interesting research topic and form an outline of how you plan to attack the question. Please meet with me early to discuss the topic and any concerns you may have.

Second, I would like you to hand in an annotated bibliography with all the journal articles we have reviewed in class (using bibtex or endnote can be invaluable for this), plus five additional papers for each doctoral student. You should work together with other doctoral students in this regard. At the end of the course you will have notes for quite a few articles and be well on your way to preparing for the environmental policy qualifying examination.

You will be expected to do assignments, complete readings, and participate in class discussion in concert with the other students.

Table 1: Reading Assignments and Class Schedule

Class	Date	Topic	Literature	Hackett	Notes	
Theory and Methods of Resource Policy Evaluation						
1	Wed, Sep 03	Syllabus and introduction	Fullerton and Stavins (1998)			
2	Mon, Sep 08	Microeconomic Fundamentals		ch.3		
3	Wed, Sep 10	Cost-benefit analysis and discounting	Goulder and Stavins (2002); Costanza (2006); Kumar (2002)	ch.7 (p.153-164)	Assignment 1 due.	
4	Mon, Sep 15	Valuing the environment	de Groot, Wilson and Boumans (2001)	ch.7 (p.164-202)		
5	Wed, Sep 17	Contingent valuation	Ingraham and Foster (2008)			
6	Mon, Sep 22	Hedonic Pricing		ch.5 (p.88-102)		
7	Wed, Sep 24	Dynamic Efficiency 1		ch.5 (p.102-123)		
8	Mon, Sep 29	Dynamic Efficiency 2				
9	Wed, Oct 01	Property rights	Anderson (1998); McKean (2000)		Assignment 2 due.	
10	Mon, Oct 06	CPR Experiments	Ostrom and Nagendra (2006); Ostrom, Walker and Gardner (1992)		Meet in IE lab, Woodburn 220	
11	Wed, Oct 08	Sustainable development - concepts		ch.12,14		
12	Mon, Oct 13	Sustainable development - topics	Aubourg, Good and Krutilla (2008)	ch.13		
13	Wed, Oct 15	Institutional analysis	Ostrom (2005, ch.8-9)			
14	Mon, Oct 20	Program evaluation	Young (2002, ch.1-2), Frondel and Schmidt (2005)			
15	Wed, Oct 22	Program evaluation examples	Ringquist and Kostadinova (2005), Vidovica and Khanna (2007)			
16	Mon, Oct 27	Theory rap up			Policy analysis paper outline due. Assignment 3 due.	
Applications to Resource Problems						
17	Wed, Oct 29	Water policy overview	Tietenberg (2000, ch.10)			
18	Mon, Nov 03	U.S. Water Law	Murphy and White (2005)		Prof Fischman lecture	
19	Wed, Nov 05	Urban water demand	Renwick and Green (2000)			
20	Mon, Nov 10	Forestry topics	Agrawal and Chhatre (2006); Andersson and Gibson (2006)	ch.16		
21	Wed, Nov 12	Forest rotations	Tietenberg (2000, ch.12)			
22	Mon, Nov 17	Fisheries policy	Imperial and Yandle (2005); Arnason (2005)	ch.6		
23	Wed, Nov 19	Fisheries - ITQs in practice	Shogren et al. (1999), Sterner (2003, ch.31)		Assignment 4 due.	
24	Mon, Nov 24	Ecosystem management and biodiversity				
No Class - Thanksgiving Break						
25	Wed, Nov 26					
26	Mon, Dec 03	Policy Analysis Presentations			Policy analysis paper due.	
27	Wed, Dec 08	Policy Analysis Presentations				
28	Wed, Dec 10	Policy Analysis Presentations			Hand out final Exam.	
28	Wed, Dec 17	Take Home Final Examination and Policy Memo due.				

References

- Agrawal, Arun and Ashwini Chhatre. 2006. "Explaining Success on the Commons: Community Forest Governance in the Indian Himalaya." *World Development* 34(1):149–66.
- Anderson, Terry L. 1998. Viewing Wildlife Through Coarse Colored Glasses. In *Who Owns the Environment?*, ed. Peter J. Hill and Roger E. Meiners. Rowmand & Littlefield Publishers, Inc.
- Andersson, Krister and Clarke Gibson. 2006. "Decentralized governance and environmental change: Local institutional moderation of deforestation in Bolivia." *Journal of Policy Analysis and Management* 26(1):99–123.
- Arnason, Ragnar. 2005. "Property rights in fisheries: Icelands experience with ITQs." *Reviews in Fish Biology and Fisheries* 15:243–264.
- Aubourg, René W., David H. Good and Kerry Krutilla. 2008. "Debt, Democratization, and Development in Latin America: How Policy Can Affect Global Warming." *Journal of Policy Analysis and Management* 27:7–19.
- Costanza, Robert. 2006. "Thinking Broadly About Costs and Benefits in Ecological Management." *Integrated Environmental Assessment and Management* 2:166–173.
- de Groot, Rudolf S., Matthew A. Wilson and Roelof M.J. Boumans. 2001. "A typology for the classification, description and valuation of ecosystem functions, goods and services." *Ecological Economics* 41:393–408.
- Fronzel, Manuel and Christoph M. Schmidt. 2005. "Evaluating environmental programs: The perspective of modern evaluation research." *Ecological Economics* 55:515–526.
- Fullerton, Don and Robert Stavins. 1998. "How Economists See the Environment." *Nature* 395:433–434.
- Goulder, Lawrence H. and Robert N. Stavins. 2002. "An Eye on the Future." *Nature* 419:673–674.
- Imperial, Mark T. and Tracy Yandle. 2005. "Taking Institutions Seriously: Using the IAD Framework to Analyze Fisheries Policy." *Society and Natural Resources* 18:493–509.
- Ingraham, Molly W. and Shonda Gilliland Foster. 2008. "The value of ecosystem services provided by the U.S. National Wildlife Refuge System in the contiguous U.S." *Ecological Economics* .
- Irwin, Elena G. 2002. "The Effects of Open Space on Residential Property Values." *Land Economics* 78:465–480.
- Kumar, Sanjay. 2002. "Does "Participation" in Common Pool Resource Management Help the Poor? A Social CostBenefit Analysis of Joint Forest Management in Jharkhand, India." *World Development* 30:763–782.
- McKean, Margaret A. 2000. Common Property: What Is It, What Is It Good for, and What Makes It Work? In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean and Elinor Ostrom. MIT Press.
- Murphy, P.J. and J. White. 2005. "Michigan Citizens for Water Conservation v. Nestle Waters North America Inc." 269 Mich. App. 25.
- Ostrom, Elinor. 2005. *Understanding Institutional Diversity*. Oxford: Princeton University Press.
- Ostrom, Elinor, James Walker and Roy Gardner. 1992. "Covenants With and Without a Sword: Self-Governance is Possible." *American Political Science Review* 89:404–417.

- Ostrom, Elinor Ostrom and Harini Nagendra. 2006. "Insights on linking forests, trees, and people from the air, on the ground, and in the laboratory." *Proceedings of the National Academy of Sciences* 103:19224-19231.
- Renwick, Mary E. and Richard D. Green. 2000. "Do Residential Water Demand Side Management Policies Measure Up? An Analysis of Eight California Water Agencies." *Journal of Environmental Economics and Management* 40(1):37-55.
- Ringquist, Evan J. and Tatiana Kostadinova. 2005. "Assessing the Effectiveness of International Environmental Agreements: The Case of the 1985 Helsinki Protocol." *American Journal of Political Science* 49(1):86-102.
- Shogren, Jason F., John Tschirhart, Terry Anderson, Amy Whritenour Ando, Steven R. Beissinger, David Brookshire, Gardner M. Jr. Brown, Don Coursey, Robert Innes, Stephen M. Meyer and Stephan Polasky. 1999. "Why Economics Matters for Endangered Species Protection." *Conservation Biology* 13:1257-1261.
- Sterner, Thomas. 2003. *Policy Instruments for Environmental and Natural Resource Management*. Washington, DC: RFF Press.
- Tietenberg, Tom. 2000. *Environmental and Natural Resource Economics*. Reading, MA: Addison-Wesley.
- Vidovica, Martina and Neha Khanna. 2007. "Can voluntary pollution prevention programs fulfill their promises? Further evidence from the EPA's 33/50 Program." *Journal of Environmental Economics and Management* 53:180-195.
- Young, Oran R. 2002. *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale*. Cambridge, MA: MIT Press.