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## **ECON 350: Sustainable Development, Spring '09 Tentative Syllabus**

### Course Description

This course provides an overview of the economics of sustainable development. We review the interactions between the environment, the economy, human resources, and public policy. Ecological constraints (climate, disease ecology, physical resources) significantly shape the economic development, wealth and poverty and anthropogenic activities (farming, resource depletion, demographic stresses, and energy use) change the physical environment. We compare and contrast sustainability science and the public economics of sustainable development with other representations of sustainability including the 3R's, Factor Four, Natural Capitalism, and self-sufficiency. We consider why Hawaii is widely regarded as an ecological basket case, what solutions are suggested by environmental economics, and what particular contribution can be made by Hawaiian principles of social organization. Topics include the economic, environmental, and cultural dimensions of sustainability; global warming and energy use: water resources and watersheds; traffic congestion and other environmental problems in Hawaii: biodiversity and endangered species; pollution solutions; unsustainable recycling; and "smart," "greedy," and "win-win" growth.

Learning Objectives (1) prepare students to distinguish and critically evaluate alternative approaches to sustainable development; (2) apply principles of microeconomics to evaluate alternative policies for components of sustainable development such as climate change mitigation, water resource management, invasive species control, public health, and the conservation/restoration of natural capital and (3) engage students in critical thinking and application of public policy analysis to problems regarding sustainability.

### Books and references:

Hackett, *Environmental and Natural Resources Economics: Theory, Policy, and the Sustainable Society* (Required)

*Scientific American*, Special Issue on Crossroads for the Planet Earth, September, 2005

National Geographic, Oct 2007, Articles on Climate Change

Millennium Ecosystem Assessment, *Ecosystems and Hum Well Being: Synthesis*, 2005.

Hawkins, Lovins, and Lovins, [\*Natural Capitalism: Creating the Next Industrial Revolution\*](#), Rocky Mountain Institute, Colorado, 2003.

Geoffrey Heal, *Nature and the Marketplace*, 2000.

### Requirements and weights

Quizzes (5): 33%<sup>2</sup>

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<sup>1</sup> Office hrs: W1:30-3; 514 Saunders

<sup>2</sup> No make-up exams w/o doctor's note or prior permission. Students can enter a written appeal on quiz grades provided they have not previously consulted regarding their answer or the correct answer. (Appeal

Final: 30%<sup>3</sup>  
Project/paper: 24%<sup>4</sup>  
Homework and citizenship: 13%<sup>5</sup>

### Topics and readings

- I. Introduction and review of microeconomics: Skim Hackett 1 and review 3 as needed. [www.mathsisfun.com/equation\\_of\\_line.html](http://www.mathsisfun.com/equation_of_line.html)
- II. Environmental and resource economics
  - a. Externalities, market failure, and Pigouvian taxes: ch 4
  - b. Coase Theorem: Hackett, 161.
  - c. Resource economics: ch 5
  - d. Energy economics
    - i. Roumasset, Fesharaki, and Isaac (pdf)
    - ii. The modern energy shock  
<http://www.nytimes.com/2008/07/28/business/worldbusiness/28suksidy.html?th&emc=th>
  - e. Pollution solutions: ch 10.
- III. Global warming
  - a. Hackett, ch 11.
  - b. James Hansen. "Can we defuse the global warming time bomb?" Scientific American, March 2004. "The Challenge of Global Warming" (1988)  
[http://www.islandpress.org/assets/library/73\\_jhchallengeglobalwarming.pdf](http://www.islandpress.org/assets/library/73_jhchallengeglobalwarming.pdf)
  - c. *An Inconvenient Truth*
  - d. IPCC. Climate Change 2007: The Physical Science Basis. Summary for Policy Makers  
[http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4\\_SPM\\_Approved\\_05Feb.pdf](http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_Approved_05Feb.pdf)  
or see International Panel on Climate Change on Wikipedia
  - e. Klaus Lackner and Jeffrey D. Sachs, "A Robust Strategy for Sustainable Energy," Brookings Papers on Economic Activity, Issue 2, 2005.\*<sup>6</sup>
  - f. S. Pacala and R. Socolow, "Stabilization Wedges: Solving the Climate Problem For the Next 50 Years with Current Technology," Science, Vol. 305, August 2004.\*
  - g. Geoffrey Heal, Nature and the Marketplace, 2000. Chapter 5\*

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consists of the ideal answer followed by a case for why the actual answer warranted a higher percentage score.)

<sup>3</sup> Final is comprehensive. See *UHM Schedule of Classes* for schedule.

<sup>4</sup> Each group produces a paper and makes a Power Point presentation. Groups will select group leaders and discuss tentative roles for each member. The acknowledgement section of the term paper should include a description of the roles played by members, including team coordinator. Proposals due at the beginning of the 5<sup>th</sup> week.

<sup>5</sup> Late homework will not be accepted. Those pre-excused or w/ doctor's note will not be penalized.

<sup>6</sup> Readings marked w/ asterisk are recommended but not required.

- h. Lovins, Amory. "More Profit with Less Carbon," *Scientific American*, Volume 293, No. 3, Sept 2005 or [Ernst U.von Weizsacker](#), *Factor Four*, 1998.\*
  - i. Nine Inconvenient Untruths (via British High Court)  
[http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2007/10/11/scigo\\_re111.xml](http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2007/10/11/scigo_re111.xml)
  - j. Benefit-cost analysis: Hackett 153-164; 383-384.
  - k. Stern Review: The Economics of Climate Change (Executive Summary)
  - l. Singer, S. Fred. 2008. Nature, not Human Activity, Rules the Climate. Available at <http://www.heartland.org/policybot/results.html?artId=22835> or [scienceandpublicpolicy.org/other/nature\\_not\\_human\\_activity\\_rules\\_the\\_climate.html](http://scienceandpublicpolicy.org/other/nature_not_human_activity_rules_the_climate.html)
- IV. Economic growth and development
- a. Thinking long term: Hackett, ch. 13
  - b. Roumasset, "Population and Agricultural Development," *The New Palgrave Dictionary of Economics*, 2007.
  - c. UN Population Division, *World Population to 2300*  
<http://www.un.org/esa/population/publications/longrange2/WorldPop2300final.pdf>
- V. The Economics of Sustainable Development
- a. Hackett, Part III
  - b. Roumasset and Endress, "The Yin and Yang of Sustainable Development: A Case for Win-Win Environmentalism," *Journal of the Asia Pacific Economy*, Vol. 1, No. 2, 185-194, (1996).
  - c. Solow, "Sustainability: An Economist's Perspective." Chapter 26 in Stavins, *Economics of the Environment*\*
- VI. Other visions of sustainability: natural capital, energy, NGO's
- a. Lester Brown: *Outgrowing the Earth*, W.W. Norton, 2004\*; Plan B, <http://www.cceia.org/resources/transcripts/1037.html> and Brown interview <http://www.cceia.org/resources/transcripts/1037.html>
  - b. Natural Capitalism (Hawkins, Lovins and Lovins)\*
  - c. J. R. McNeill, *Something New Under the Sun*\*
  - d. Department for International Development. "Energy for the Poor," May 2002.\*
  - e. International Energy Agency. *Toward a Sustainable Energy Future*. (OECD, 2001).\*
  - f. Soft Energy and the Rocky Mountain Institute  
[http://en.wikipedia.org/wiki/Soft\\_energy\\_path](http://en.wikipedia.org/wiki/Soft_energy_path)
  - g. Urbanization and Smart Growth
  - h. NGO's and the sustainability movement:  
[http://en.wikipedia.org/wiki/Earth\\_Charter](http://en.wikipedia.org/wiki/Earth_Charter)  
[http://en.wikipedia.org/wiki/World\\_Summit\\_on\\_Sustainable\\_Development](http://en.wikipedia.org/wiki/World_Summit_on_Sustainable_Development)
  - i. Selections from Hawkin, *Blessed Unrest: How the Largest Movement in the World Came into Being and Why No One Saw It Coming*, 2007.\*
- VII. Traffic congestion
- a. Arnott, Rave, and Schob, *Alleviating Urban Traffic Congestion* (MIT, 2005).\*

- b. Arnott and Small, "The Economics of Traffic Congestion," *American Scientist* 82 (1994), 446-455.\*
- c. Selections from [www.honolulutraffic.com](http://www.honolulutraffic.com)

#### VIII. Regulating renewables: Water, fish, and marine ecosystems

- a. Hackett, ch 6.
- b. Water for Life: the history and future of water on Oahu  
[http://www.boardofwatersupply.com/files/Wfl\\_Website.pdf](http://www.boardofwatersupply.com/files/Wfl_Website.pdf)
- d. Global water scarcity:  
[http://multimedia.wri.org/watersheds\\_2003/gm16.html](http://multimedia.wri.org/watersheds_2003/gm16.html)
- e. Roumasset, James A., and Barsharat, Pitafi A. "Integrated Water Management Policies for Oahu", *Water Resources Research Bulletin*, March, 2005.
- f. Jeremy Jackson et al. "Historical Overfishing and the Recent Collapse of Coastal Ecosystems." *Science* Vol 293 27 July 2001.\*
- g. International Food Policy Research Institute, *Fish to 2020*, Washington, 2003
- h. Roy, N. "The Atlantic Canada Resource Management Catastrophe: What Went Wrong and What Can We Learn From It?" *Canadian Journal of Economics*, Vol. 29, Special Issue, April 1996. pp. S139-144.\*
- i. Pikitch, Ellen K., "The Gathering Wave of Ocean Extinctions," *State of the Wild* 2006, pg 195-201.\*

#### IX. The Challenge of Biodiversity

- A. "Ecosystems and Human Well Being: Synthesis," Millennium Ecosystem Assessment, 2005. <http://www.millenniumassessment.org/proxy/Document.356.aspx>
- B. Stuart Pimm and Clinton Jenkins, "Sustaining the Variety of Life," *Scientific American*, Vol. 293, No. 3, September 2005.
- C. Geoffrey Heal, *Nature and the Marketplace*, 2000. Chapter 4
- D. Convention on Biological Diversity. *Global Biodiversity Outlook*. CBD: Montreal, 2001 or CBD on Wikipedia.
- E. Duffy, D. and F. Kraus. May 2006. Science and the Art of the Solvable in Hawaii's Extinction Crisis. *Environment Hawaii* 16(11)1: 3-6. . [View complete text in html format](#)

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#### X. Health and Poverty

- A. WHO Commission on Macroeconomics and Health, *Macroeconomics and Health: Investing in Health for Economic Development*, 2001\*
- B. Barry Bloom, "Public Health in Transition," *Scientific American*, Vol. 293, No. 3, September 2005.
- C. Jeffrey D. Sachs and Pia Malaney, "Economic Burden of Malaria," *Nature*, Vol. 415, February 2002.
- D. Laurie Garrett, "The Next Pandemic?" *Foreign Affairs*, Vol. 84, Issue 4, July-August 2005.