

ECON 107

Honors Core: Economies, Nature, and the Environment.

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Spring 2008

Abstract

This course examines the interactions between societies and their natural environment both from a global and an historical perspective. Students will synthesize valuable insights acquired by reading material from various disciplines, including economics, geography, archaeology, history, ecology.

Course description. This course first addresses the impact of nature on human societies and their development by recognizing that the expansion of the anthroposphere into the rest of the biosphere has been affected by climate, by geographic factors, and by the distribution of natural resources. In particular, the existing worldwide differences in well-being can be shown to be correlated with various geographic and climate variables, as well as with measures of natural resources, using data collected primarily by geographers and economists. The possible mechanisms underlying these correlations will be examined, as well as the impact of natural disasters on economies. Adopting a historical perspective will also help explain current differences in well-being, but through more complex mechanisms by which nature and the environment has affected the birth, development, and sometimes collapse of past societies. In particular, we will follow the broad scenario of Diamond's book *Guns, Germs and Steel: The Fate of Human Societies*, piecing together contributions from historians, ecologists, anthropologists, biologists and geographers. We will also review some of the criticisms of Diamond's work.

The second part of the course recognizes that, from the domestication of fire to our globalized world, humans have constantly affected and modified their environment. Taking a global perspective, we will identify a set of serious current environmental problems, as discussed for instance in Speth's book *Red Sky at Morning*. Students will learn how economic theory may be used to explain why most of these problems exist in the first place. By examining some of the evidence concerning the collapse of several past societies, we will find that many of today's environmental problems are not new, and that environmental damage, climate change, and society's responses to its environmental problems have been major determinants of past collapses.

The course ends with a discussion of the concept of sustainable development, a concept widely embraced but rarely translated into policies, and of the idea of a multidisciplinary and scientific study of the coevolution of socio-natural systems.

Required reading. Papers on the reading list are chosen from journals in various fields (including *Science*, *Nature*, *The American Economic Review*, *The European Economic Review*, *Quarternary Science Review*, *Geographical Review*). All papers (or book chapters) listed in this syllabus are available either electronically or in hard copies from the library. In addition, students are required to obtain and read the following books:

◆ Diamond, Jared (1997) *Guns, Germs, and Steel: The Fate of Human Societies*, W.W. Norton & Company, New York, London.

◆ Speth, James Gustave (2004) *Red Sky at Morning: America and the Crisis of the Global Environment*, Yale University Press, New Haven and London.

Grading. Grading will be based on the combined performance of students in 2 essays, 2 group projects, and in class participation.

Essays. 2 short written individual essays.

■ Your first essay (the “current even report”, 2 to 3 pages) discusses a current event or set of events related to the interaction between economies and their environment (for instance, impact of a recent or current natural disaster, presentation of a new environmental law, discussion of the outcome of an important international meeting related to the environment, comparative study between several countries with respect to a particular environmental issue,...).

■ Your second essay is a book review (5 to 7 pages) on a book you have read during the semester which relate to the interaction between economies and their environment. You may choose one of the suggested book (but make sure it is available from the library at that time), or you may ask the instructor the permission to review a particular book not listed below. Your review is due on the last day of classes.

Group projects. 2 group projects (groups of three students will be formed during the first week). All three members of the group get the same grade on a given project.

■ An applied project (2 pages maximum) summarizing your findings during the applied project of week 2 (methodology, results, and discussion).

■ A written essay (5 to 7 pages) presenting your group’s analysis of the environmental issue/problem assigned during the first week of class. In this essay, you should (a) inform the reader of the nature and magnitude of the problem/issue, (b) explain its causes and consequences, and (c) state some possible courses of actions. Each group will present its analysis and findings to the class in a 35 minutes powerpoint/slide presentation. Any picture shown in your presentation must be your own.

Report	Book review	Group projects	Class participation
10%	30%	10%	50%

Note: It is essential that you complete the reading assignments before coming to class. All articles and papers are available from the library, and it is part of your assignment that you get your hands on these papers. Uninformed class participation can only affects your grade negatively.

Syllabus: Topics and readings

Week 1. Introduction. Course outline, group formation, major environmental problems.

Reading: Palumbi01

START READING DIAMOND.

Week 2. Inequalities in well-being. comparing societies. Applied project: Index construction.

Reading: Diamond's Prologue

Week 3. Nature and the inequality puzzle. Impact of nature on development, formulating and testing hypothesis with data.

Reading: (1) Nordhaus05; (2) Gylfason01 and Sachs01.

Week 4. Natural disasters. Types and frequencies, effects of natural disasters, forecast, prevention and mitigation.

Week 5. Nature and the inequality puzzle. Domestication of fire, birth of agriculture, spread of agriculture.

Reading: Diamond, CH 1, 5, 6, 7, 8, 10, Diamond97, Diamond02, Gopher00.

Week 6. Nature and the inequality puzzle. From food production to complexity.

Reading: Diamond, CH 11, 12, 13, 14.

Week 7. Nature and the inequality puzzle. Critique of Diamond's analysis. Climate and history.

Reading: (1) Blaut99 and Goldstone00; (2) Olsson05.

START READING SPETH

Week 8, 9, 10. Global environmental issues. Group presentations.

Week 11. Causes of environmental problems. Introduction to the theory of externalities. Valuing the environment.

Reading: (1) Hardin68, Hardin98 and Pretty03; (2) Alexander99, Costanza97, and Arrow95.

Week 12. Population and carrying capacity.

Reading: (1) Vitousek86 and Vitousek97; (2) Cohen03 and Pimentel03.

Week 13. Societies and the environment: Past and Future. Past societal collapses, sustainable development.

Reading: (1). deMenocal01 and Weiss01; (2) Bahn03, McMichael03, Messerli00 and Ruddiman05.

Reading list

- ◆ **(Alexander99)** Alexander, N.J. & al. (1999) Balancing the Earth's Account, *Science* 401: 323-324.
- ◆ **(Alley03)** Alley, R.B. & al. (2003) Abrupt Climate Change, *Science* 299: 2005-2010.
- ◆ **(Arrow95)** Arrow, K. & al. (1995) Economic Growth, Carrying Capacity, and the Environment, *Science* 268: 520-521.
- ◆ **(Bahn03)** Bahn, Andy and John Growdy (2003) Economics Weak and Strong: Ecological Economics and Human Survival, *World Futures* 59:3, 253-262
- ◆ **(Blaut99)** Blaut, J. M. (1999) Environmentalism and Eurocentrism: A Review Essay, *Geographical Review* 89(3): 391-408.
- ◆ **(Cohen03)** Cohen, Joel E. (2003) Human Population: The Next Half Century, *Science* 301: 1172-1175
- ◆ **(Costanza97)** Costanza, R. & al. (1997) The Value of the World's Ecosystems Services and Natural Capital, *Nature* 387: 253-261.
- ◆ **(deMenocal01)** deMenocal, Peter B. (2001) Cultural Responses to Climate Change During the Late Holocene, *Science* 292: 667-674
- ◆ **(Diamond02)** Diamond, Jared (2002) Evolution, Consequences and Future of Plant and Animal Domestication, *Nature* 418: 700-708.
- ◆ **(Diamond97)** Diamond, Jared (1997) Location, Location, Location: The First Farmers, *Science* 278: 1243-1244.
- ◆ **(Goldstone00)** Goldstone, Jack A. (2000) The Rise of the West-Or Not? A Revision to Socio-Economic History, *Sociological Theory*, 18(2): 175-194
- ◆ **(Gopher00)** Lev-Yadun, Avi Gopher and Shahal Abbo (2000) The Cradle of Agriculture, *Science* 288: 1602-1603.
- ◆ **(Gylfason01)** Gylfason, T. (2001) "Natural resources, Education, and Economic Development, *European Economic Review* 45: 847-859.
- ◆ **(Hardin68)** Hardin, G. (1968) The tragedy of the Commons, *Science* 162: 1243-1248.
- ◆ **(Hardin98)** Hardin, G. (1998) Extensions of the Tragedy of the Commons, *Science* 280: 682-683.
- ◆ **(IPCC-group1)** Intergovernmental Panel on Climate Change, *Working Group 1, Summary report for Policy Makers*, 2007.
- ◆ **(IPCC-synthesis)** Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, 2007.
- ◆ **(Lovelock03)** Lovelock, James and Peter Seidel (2003) A Primer of Civilization, *World Futures* 59(3): 315-318.
- ◆ **(MA-Ecosystems)** Millenium Ecosystem Assessment (2005) *Ecosystems and Human Well-Being, Synthesis*.
- ◆ **(McMichael03)** McMichael, A.J. & al. (2003) New Visions for Addressing Sustainability, *Science* 302: 1919-1920.
- ◆ **(Messerli00)** Messerli, B., M. Grosjean, T. Hofer, L. Nunez and C. Pfister (2000) From Nature Dominated to Human Dominated Environmental Changes, *Quarternary Science Review* 19: 459-479.
- ◆ **(Nordhaus05)** (2005) Nordhaus, Wiliam D. Geography and Macroeconomics: New Data and New Findings, *Proceedings of the National Academy of Sciences*.
- ◆ **(Olsson05)** Olsson, Ola and Douglas A. Hibbs (2005) Biogeography and Long-run

Economic Development, *European Economic review* 49: 909-938.

◆ **(Palumbi01)** Palumbi, Stephen & al. (2001) Humand as the World's Greatest Evolutionary Force, *Science* 293: 1786-1791.

◆ **(Pimentel03)** Pimentel David and Marcia Pimentel (2003) World Population, Food, Natural resources, and Survival, *World Futures* 59(3): 145-167.

◆ **(Pretty03)** Pretty, Jules & al. (2003) Social Capital and the Collective Management of Resources, *Science* 302: 1912-1915.

◆ **(Ruddiman05)** Ruddiman, William F. (2005) How did Humans First Alter Global Climate? *Scientific American*, March 2005: 46-53.

◆ **(Sachs01)** Sachs, Jeffrey and Andrew M. Warner (2001) The Curse of Natural Resources, *European Economic Review* 45: 827-838.

◆ **(Solow74)** Solow, R. (1974) The Economics of Resources or the Resources of Economics, *The American Economic Review* 64(2): 1-21.

◆ **(Vitousek86)** Vitousek, P. & al. (1997) Human domination of Earth's ecosystems, *Science* 277: 494-499.

◆ **(Vitousek97)** Vitousek, P. & al. (1986) Human appropriation of the products of photosynthesis, *Bioscience* 36: 368-373.

◆ **(Weiss01)** Weiss, H. and R. Bradley (2001) What Drives Societal Collapse? *Science* 292: 609-610.

◆ **(D)** Diamond, J. (1997) *Guns, Germs, and Steel: The Fate of Human Societies*, W.W. Norton & Company, New York, London.

Suggested books to review

Many of the following books are available from the Uconn library, in which case I indicated the call number (although anyone can check out any of these book at any time). In any case, the library can get you fairly rapidly *any* book you request. You may decide to review a book not listed below, but I must first approve your choice.

1. Climate Change:

◆ Calvin, William H. *A Brain for all Seasons: Human Evolution and Abrupt Climate Change*, University of Chicago Press, 2002. (GN281.4.C293 2002)

◆ Ruddiman, W.F. *Plows, Plagues, and Petroleum: How Humans took Control of Climate*, Princeton University Press, 2005.

◆ Cox, John D. *Climate Crash: Abrupt Climate Change and what it means for our Future*, Joseph Henri Press, 2005. (QC884.C69 2005)

◆ Fleming, James Rodger *Historical Perspective on Climate Change*, New York: Oxford University Press, 1998. (QC981.8.C5 F45 1998)

◆ Fagan, Brian *The Long Summer: How Climate Changed Civilization*, Basic Books, New York, 2004. (QC981.8.C5 F34 2004)

◆ Fagan, Brian *The Little Ice Age: How Climate made History, 1300-1850*, Basic Books, New York, 2000. (QC989.A1 F34 2000)

◆ Fagan, Brian *Floods, Famines, and Emperors: El Nino and the Fate of Civilization*, Basic Books, New York, 1999.

◆ Wigley, T.M.L., M.J. Ingram, and G. Farmer *Climate and History: Studies in Past Climate and their Impact on Man*, Cambridge University Press, 1981. (QC981.8.C5 C5)

◆ Flanney, Tim F. *The Weather Makers: The History and Future Impact of Climate Change*, Penguin Books, 2006 (QC981.8.C5 F438 2005).

◆ Linden, E. *The Winds of Change*, Simon and Schuster, 2006.

3. Geography/History:

◆ Diamond, Jared *Collapse: How Societies choose to Fail or Survive*, New York: Allen Lane, 2005. (HN13.D5 2005b)

◆ Posner, Richard *Catastrophe: Risk and Response*, Oxford University Press, 2004. (HV551.2.P675 2004)

◆ Ponting, Clive *A Green History of the World: The Environment and the Collapse of Great Civilizations*, New York: St Martin's Press, 1992. (GF75.P66 1992)

◆ McNeill, J.R. *Something New under the Sun: An Environmental History of the Twentieth-century World*, W.W. Norton, 2000. (GF13.M39 2000)

4. Contemporary issues:

◆ McKibben, Bill *The End of Nature*, Random House, Inc. New York, 1989. (GF75.M38 1989)

◆ de Blij, Harm *Why Geography matters: Three Challenges facing America*, Oxford University Press, 2005. (GF503.D4 2005)

◆ Wilson, Edward O. *Consilience: The Unity of Knowledge*, Vintage Books 1998.

◆ Wilson, Edward O. *The Diversity of Life (second edition)*, W.W. Norton Company, 1999.

◆ Wilson, Edward O. *The Future of Life*, Vintage Books 2003.

◆ Pollan, Michael *The Omnivore's Dilemma*, Penguin Press 2006.

General Education. This course meets the following General Education goals:

1. Become articulate. Students will write two essays in which they will be required to present their analysis, arguments, and conclusions in an articulate manner. Students will be expected to actively participate in class discussions to expose their ideas and arguments in a convincing manner.

2. Acquire intellectual breadth and versatility. Students will be exposed to insights and findings from various disciplines, including economics, ecology, environmental science, demography, and history. They will analyze and synthesize these findings to get a better understanding of the many complex mechanisms underlying the interactions between societies and their environment.

3. Acquire critical judgment. Students will be asked to be critical and to question, analyze and scrutinize everything they hear and read, including the content of this course. Exposed to a variety of reading material, they will be asked to evaluate how the information related to an issue was obtained, to question the evidence and conclusions presented, and to assess the assumptions of those presenting the evidence and drawing conclusions.

4. Acquire an awareness of their era and society. Students will learn about the current major environmental problems, the causes of these problems and their consequences on our society. They will discuss the possible responses of our society to these challenges, and learn how some societies in the past have faced similar issues.

In addition, it meets some specific Social Science criteria:

1. Students will be introduced to basic elements of economic theory (supply and demand, market structures, national income), as well as more advanced concepts such as the theory of externalities, game theory, and sustainable development. Additionally, students will be exposed to many concepts and ideas from political science, sociology, geography, and environmental science.

2. This course will emphasize the use of the scientific method in social sciences, in particular the gathering and analysis of data, the testing of hypothesis and the design of natural experiments. Throughout the course students will also discuss some of the differences with other sciences associated methodological issues (laboratory versus natural experiments, proximate versus ultimate causes), as well as issues concerning causation, prediction, and complexity.

3. Students will use simple tools from game theory and the theory of externalities to understand how and why various communities and economic groups compete for resources, and learn that this competition for resources and economic power has led to the collapse of some societies in the past. Students will also learn how poverty is connected to environmental problems and resource depletion, and will examine some possible remedies to poverty at the societal and international level.