MODULE TEACHING GUIDE

	1th COURSE
40418	Foundations of ecologicals economics
40419	Socioenvironmental research methods
40963	Transversal concepts and techniques I

MODULE TEACHING GUIDE

GENERAL DATA OF THE MODULE

Name	FOUNDATIONS OF ECOLOGICAL ECONOMICS
Code	
Course and teaching period	First Semester
Schedule	
Credits ECTS	10
Type of Module	**Common of Master** **Common of speciality**
Previous requirements to follow the module	-
Teaching language	English
Module responsible	Dr Jesus Ramos, Jesus.Ramos@uab.cat
Department responsible	Dpt Economia I Història Econòmica,

TEACHING TEAM

Professor name	Department	Office	e-mail	Tutorials
J.Martinez-Alier	Econ.Hist.Econ.	B3-110	joan.martinez.alier@uab.cat	
Giuseppe Munda	Econ.Hist.Econ.	B3-112	giuseppe.munda@uab.es	
Jeroen van den Bergh	ICTA		jeroen.bergh@uab.cat	
Jesus Ramos			Jesus.Ramos@uab.cat	

MODULE ESPECIFIC DATA

Educational objectives of the Module	At the end of the module, the student will be able to understand how the economic system is an evolving subsystem of a large physical system that can be understood in terms of energy and material flows. Ecological Economics to some extent overlaps with Environmental and Resource Economics, and also with Social and Human Ecology. This module will teach students the concepts and the full variety of methods of Ecological Economics. At the macro-economic level, the concepts of Weak and Strong Sustainability will be discussed. Students will also learn the tools of environmental economic policy.	
Specific skills of the module	**Skill**	**Description**
	Students will be able to read research articles in ecological economics, and to prepare a research proposal for a master thesis in this field.	
Module structure and contents	The history of Ecological Economics. Indicators and indices of Sustainability. Environmental macroeconomic accounting. Economics of Resources. Externalities and environmental policy. Cost-benefit analysis compared to Multi-criteria evaluation. Technical change and consumption. Analysis of specific issues (climate change, biodiversity).	
Teaching methodology	Readings for each session will be assigned beforehand. Teaching time will be divided between explanation and question time. Students will prepare essays every two weeks.	
Evaluation	Essays, and final exam (exam: 70 %).	
Bibliographic and web links	1) J. Martinez-Alier and Inge Ropke, eds. *Recent Developments in Ecological Economics*, Edward Elgar, Cheltenham, 2008 (2 vols). 2) There is an on-line Encyclopedia of Ecological Economics, at www.ecoeco.org	

JEMES Joint European Master in Environmental Studies

AALBORG UNIVERSITET universidade de aveiro TUHH Technische Universität Hamburg-Harburg UAB Universitat Autònoma de Barcelona

Module Socioenvironmental Research Methods

Course II: Economics and Natural Resources: Methodological Issues

Dr. Jesús Ramos Martín

First Semester | ICTA: Aula Collserola

Contents

The course will introduce some of the most frequent methods used to analyse the relationship between economies and their environment. In particular, the course will start with a discussion of methods applied by traditional environmental economists such as renewable and non-renewable resources management, and environmental valuation methods. This will be followed by a session on general issues regarding complexity and thermodynamics. After this bridge session, the course will present some methodologies aimed at grasping the biophysical reality behind (or beside) economic development. One session will deal with integrating information coming from different methodologies by means of multi-criteria analysis. Finally, the last session will allow an exchange among the participants on the possible application of the methodologies presented for each one's research.

Goals of this Seminar

At the end of the course the student is expected to have a clearer idea on:

i) The basic literature regarding the methods presented;
ii) The relationship between the economic process and the environment and the different approaches used for analysis in standard economics and Ecological Economics;
iii) The traditional tools that economics is using for environmental management;
iv) New approaches that are applied within ecological economics;

Methodology

Lectures, reading of key literature, discussions

Each session will start with a 1.30h lecture by the lecturer, followed by a short break, a group discussion based on the lecture, the readings (please make sure to read the paper before the session) and the guiding questions, and ended with a sum-up by the lecturer. Students are expected to be competent in English.

Student's assessment

Done at the level of the Module. Check details in the Module's description sheet.

Place

ICTA, Aula Collserola, 15.00 – 18.00

Dates and topics:

Mo	15h – 18h	**Presentation of the course** **1. Economic valuation of environmental goods and services** Markets and externalities Property rights: Coase theorem Efficiency vs. Equity: the discount rate Definitions of value: total economic value Economic valuation techniques: contingent valuation, hedonic prices, etc. Cost-Benefit Analysis **2. Renewable and non-renewable resources management** Non-renewable resources reserves: the case of oil (Hubbert revisited and ASPO) Hotelling rule El-Sarafy Renewable resources management Biological and economic models
We	15h – 18h	**3. Complexity and thermodynamics and their relevance for ecological economics** The Laws of thermodynamics Exosomatic evolution Self-organisation and complexity Hierarchy theory
Mo	15h – 18h	**4. Material Flow Accounting** Eurostat (and IFF-Social Ecology, Vienna) and Wuppertal Institute methodologies HANPP and Ecological Footprint Physical Input-Output analysis **5. Energy accounting** eMergy Exergy
We	15h – 18h	**6. Multi-Scale Integrated Assessment of Societal Metabolism** Mosaic Effect Impredicative Loop Analysis Main variables and relations Benchmarking Examples
Mo	15h – 18h	**7. Integrating information: Multi-Criteria Analysis**

		Methodological foundations: rationality, complexity, and post-normal science Structuring of a multi-criteria problem: alternatives, criteria, weighs Main aggregation methods: Electre, Promethee, Naiade Interests and value conflicts: social multi-criteria and participation
We	15h – 18h	**8. Discussion: Application of the methodologies to our research** **Summary and feedback**

Compulsory readings and questions for guiding discussion

Session 1: Munda, G. (1996): **"**Cost-benefit analysis in integrated environmental assessment: some methodological issues", *Ecological Economics*, Vol. 19 (2): 157-168

1. Do you discount the (your) future?
2. Which is the value of La Sagrada Familia?
3. How to deal with equity issues in environmental valuation?

Session 2: Chapters 16 & 18 from Pearce, D.W., Turner, K.R. (1990): *Economics of Natural Resources and the Environment*. Baltimore: The John Hopkins University Press.

1. Do you think that El-Serafy's rule has some possible application?
2. What shall we do, according to standard theory, when oil runs up? Is it feasible?

Session 3: Chapters 6 & 7 from Faber, M., Manstetten, R., and Proops J. (1996): *Ecological Economics. Concepts and Methods*. Edward Elgar, Cheltenham, UK.

1. Can we consider cities as Brains or parasites of the rest of the territory?
2. Does evolution implies always more energy consumption?

Session 4: Weisz, H., Krausmann, F., Amann, C., Eisenmenger, N., Erb, K.H., Hubacek, K., Fischer-Kowalski, M: (2006): "The physical economy of the European Union: Cross-country comparison and determinants of material consumption", *Ecological Economics*, Vol. 58 (4): 676-698

1. How would you use MFA indicators for policy?
2. What do you think about summing up the mass or energy contents of shit, oranges and natural gas?

3. Is HANPP reflecting the impact humans beings cause upon the environment?

Session 5: Ulgiati, S., Odum, H.T., Bastianoni, S. (1994): **"**Emergy use, environmental loading and sustainability an emergy analysis of Italy", *Ecological Modelling*, Vol. 73 (3-4): 215-268

1. What about an energetic theory of value? Would it be useful?
2. Which are the main problems you see in using eMergy accounting for policy?
3. Do you think Exergy is a good indicator for measuring the quality of energy or work done?

Session 6: Ramos-Martin, J., Giampietro, M., Mayumi, K. (2007): "On China's exosomatic energy metabolism: An application of multi-scale integrated analysis of societal metabolism (MSIASM)", *Ecological Economics*, Vol. 63: 174-191.

1. How to address multidisciplinarity in environmental research?
2. How can we deal with different hierarchical levels in our analysis?
3. Give an example of the importance of hierarchical structures in your planned research
4. How would you include trade under MSIASM framework?

Session 7: Munda, G. (2004): "Social multi-criteria evaluation: Methodological foundations and operational consequences", *European Journal of Operational Research*, Vol. 158 (3): 662-677

1. Are all interest values legitimate?
2. Is participation a Panacea?
3. How to make decisions with several variables?

Session 8: No paper.

1. Which is the research topic for your dissertation?
2. Have you decided the methodology you shall use? If so, which and why?
3. Do you think any of the methods presented along the course are useful to you? How?

General Readings

Ayres, R.U., Ayres, L.W., Warr, B. (2002): "Exergy, power and work in the US economy, 1900-1998", *Energy*, Vol. 28 (3): 219-272.

Common, M. and Stagl, S. (2005): *Ecological Economics*. Cambridge University Press, Cambridge.

Costanza, R. (ed.)(1991): *Ecological economics : the science and management of sustainability*. New York: Columbia University Press.

EUROSTAT. 2001. *Economy-wide material flow accounts and derived indicators. A methodological guide*. Statistical Office of the European Union, Luxembourg.

Giampietro, M. (2003): *Multi-Scale Integrated Analysis of Agroecosystems*. CRC Press.

Haberl, H., Wackernagel, M., Krausmann, F., Erb, K.H., Monfreda, C. (2004): "Ecological footprints and human appropriation of net primary production: a comparison", *Land Use Policy*, Vol. 21 (3): 279-288.

Hoekstra, R. (2005): *Economic Growth, Material Flows and the Environment: New Applications of Structural Decomposition Analysis and Physical Input-Output Tables*. Edward Elgar, Cheltenham, UK.

Martinez Alier, J. (with Klaus Schlüpmann) (1987): *Ecological economics : energy, environment and society*. Oxford: Basil Blackwell.

Martínez Alier, J., y Roca Jusmet, J. (2000): *Economía ecológica y política ambiental*. PNUD, Mexico.

Munda, G. (1995): *Multicriteria evaluation in a fuzzy environment theory and applications in ecological economics*. Physica-Verlag, Heidelberg.

Odum, H.T. (1971): *Environment, Power and Society*. John Wiley & Sons.

Odum, H.T. (2004): *Environmental Accounting: Emergy and Environmental Decision Making*. John Wiley & Sons.

Pearce, D.W., and Turner, K. (1990): *Economics of natural resources and the environment*. New York ; London : Harvester Wheatsheaf.

Props., J., and Faber, M. (1996): *Ecological economics : concepts and methods.* Cheltenham: Edward Elgar.

Romero, C. (1997): *Economía de los recursos ambientales y naturales*. Alianza Economía, Madrid.

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MODULE TEACHING GUIDE

GENERAL DATA OF THE MODULE: Transversal concepts and techniques I
Code: 40963

New trends in European environmental policiesLand use and GIS
Technology and environment
Seminars in environmental science

Course : "Environmental Thought"

First Semester 09-10 **3 ECTS**	Agustí Nieto-Galan agusti.nieto@uab.cat CEHIC C1/-146 Facultat de Ciències

About this course

The course aims to provide an introductory survey of the major issues debated by Western environmentalists over the last century. It examines some aspects of history, philosophy, politics, and culture, as presented or criticized by environmentalists. Through the critical analysis of a selected group of 'classic' authors, the course analyses the complex interplay between nature and culture from a humanistic perspective.

Lectures and seminars

The course will be held at the ICTA lecture room. It has 6 sessions (10:00 a.m. to 1:00 p.m. with a break), which combine formal lectures with seminar discussions.
Every session will include selected readings and some questions for discussion.
Discussion will take place regularly in the first half of every session. Students will prepare short presentations (15 minutes) of specific articles to stimulate discussion.

01-10-09: *Introduction: Nature, culture and the environment*

06-10-09: *Early critics on industrialization*

08-10-09: *Ecological movements and counter culture*

13-10-09: *Women, gender and the environment*

15-10-09: *Recent debates on Environmental issues*

10-11-09: *Seminar. Discussing draft papers*

Assessment

Short presentation of selected papers contributes 20% to final mark.

Long Essay on some aspect of the work of a 'classic' environmentalist, contributes 80% to final mark, 3000 words

'Classic' environmentalists

We include among others scholars such as Lewis Mumford, Leo Marx, Donald Kranzberg, Donald Worster, William Cronon, Peter Hay, Dale Jamieson, and John MacNeill; some luminaries of the green movement of the 1960s such as Rachel Carson, Theodore Roszak, and Barry Commoner; founders of eco-feminism such as Carolyn Merchant; and defenders of 'liberal' and conservative appropriations of environmentalism, such as Al Gore and Lomborg Bjorn.

General Bibliography.

BAUER, Martin (ed.) *Resistance to new technology*. Cambridge University Press. Cambridge 1994.

BOWLER, Peter, *The Fontana History of the Environmental Sciences.* Fontana Press. London 1992. (*Historia Fontana de las ciencias ambientales.* FCE. México 1998).

BRAMWELL, A., *Ecology in the 20th Century: A History.* Yale Univ. Press. New Haven 1989.

BRIMBLECOMBE, Peter, *The big smoke: a history of air pollution in London since medieval times*. Methuen, London and New York, 1987.

CARSON, Rachel, *Silent spring*, London : Hamish Hamilton, 1963 (London : Penguin Books in association with Hamish Hamilton, 1965) (Boston: Houghton MIfflin. 1994, 2002).

CARSON, Rachel, *Lost woods : the discovered writing of Rachel Carson / edited and with an introduction by Linda Lear* Boston : Beacon, 1998.

COHEN, Yves, "Scientific Managment and the Production Process", in KRIGE, J., PESTRE, D., (eds.) *Science in the Twentieth Century*. Harwood Academic Publishers. Amsterdam 1997. pp. 111-124.

COMMONER, Barry **,** *Science and survival.* New York: Ballantine Books, 1970.

COMMONER, Barry, *The Closing circle: confronting the environmental crisis***.** London: Jonathan Cape, 1971.

COMMONER, Barry, *Making peace with the planet.* New York: Pantheon Books, 1990.

CRONON, William**,** *Changes in the land: Indians, colonists, and the ecology of New England***.** New York: Hill and Wang, 1983.

CRONON, William**,** *Nature's metropolis: Chicago and the Great West***.** New York: W.W. Norton & Company, 1992.

CRONON, William (ed.) *Uncommon ground: rethinking the human place in nature***.** New York. W.W. Norton & Company, 1996.

DUNLAP, Thomas R. (ed.) *DDT, Silent spring, and the rise of environmentalism; classic texts*. University of Washington Press. Washington 2008.

FEENBERG, Andrew, *Questioning Technology*. Routledge. London and New York 1999.

FLEMING, James R., GEMERY, Henry A. (eds.) *Science, Technology, and the Environment*. The University of Akron Press. Akron 1994.

GORE, Albert, *An Inconvenient truth* (film), directed by Davis Guggenheim; produced by Lawrence Bender, Laurie David. United Kingdom: Paramount Home Entertainment, 2006.

GORE, Albert, *An Inconvenient truth: the planetary emergency of global warming and what we can do about it.* London: Bloomsbury, 2006.

HAY, Peter, *A Companion to environmental thought***.** Edinburgh: Edinburgh University Press, 2002.

JAMIESON**,** Dale (ed.) *A Companion to environmental philosophy***.** Malden, Mass.: Blackwell, 2001.

JAMIESON**,** Dale, and Lori Gruen (eds.) *Reflecting on nature: readings in environmental philosophy*. **N**ew York: Oxford University Press, 1994.

JORDANOVA, Ludmila, PORTER, Roy (eds.), *Images of Earth: Essays in the History of the Environmental Sciences*. BSHS, Bucks 1979.

KAMIENEICKI, Sheldon (ed.) *Environmental Politics in the International Arena*. State University of New York Press, Albany 1993.

KRANZBERG, Melvin, "Technology and History: 'Kranzberg's Laws" a REYNOLDS, T.S., CUTCLIFFE, S.H., (eds.) *Technology and the West. A Historical Anthology from Technology and Culture*. The University of Chicago Press, Chicago 1997. pp. 5-20.

LOMBORG, Bjorn, *The Skeptical environmentalist: measuring the real state of the world***.** Cambridge: Cambridge University Press, 2001.

LOMBORG, Bjorn (ed.) *Global crises, global solutions***.** Cambridge: Cambridge University Press, 2004.

LEAR, Linda J., "Rachel Carson's Silent Spring", *Environmental History Review*, 17(2), 1993, 23-48.)

MARX, Leo, *The Machine in the Garden: the Pastoral Ideal in America*. Oxford University Press. New York 1964.

MARX, Leo; Jill Ker Conway and Kenneth Keniston (eds.) *Earth, air, fire, water: humanistic studies of the environment*. Amherst: University of Massachusetts Press, 1999.

McCORMICK, J. , *The Global Environment Movement: Reclaiming Paradise*. Indiana Univ. Press. Belhaven 1989.

McNEIL, Ian (ed.) *An Encyclopedia of the History of Technology*. Routledge. London 1990.

McNEILL, John, *Something New under the Sun. An Environmental History of the Twentieth Century*. Penguin. London 2000.

McNEILL, John, and Verena Winiwarter (eds.) *Soils and societies: perspectives from environmental history*. Isle of Harris: White Horse Press, 2006.

McNEILL, John; Alf Hornborg, and Joan Martinez-Alier (eds.) *Rethinking environmental history: world-system history and global environmental change*. Lanham : AltaMira Press, cop. 2007

MERCHANT, Carolyn, *Earthcare: Women and the Environment.* Routledge, New York 1996.

MERCHANT, Carolyn, *The death of nature: women, ecology, and the scientific revolution***.** San Francisco: Harper & Row, 1983.

MERCHANT, Carolyn**,** *Radical ecology: the search for a livable world.* New York: Routledge, 1992.

MERCHANT, Carolyn**,** *Reinventing Eden: the fate of nature in Western culture***.** New York : Routledge, 2003.

MERCHANT, Carolyn**;** Shepard Krech III, J.R.McNeill (eds.) *Encyclopedia of world environmental history***.** New York: Routledge, 2004.

MERCHANT, Carolyn, *American environmental history : an introduction.* New York: Columbia University, 2007.

MILLER, Donald L. (ed.) *The Lewis Mumford reader*. Athens: University of Georgia Press, 1995.

MUMFORD, Lewis, *Technics and civilization.* New York: Harcourt Brace, 1934.

MUMFORD, Lewis, *The city in history: its origins, its transformations, and its projects*. London, Secker and Warburg, 1961.

MUMFORD, Lewis, *The Myth of the machine.* San Diego: Harcourt Brace Jovanovich, 1970.

MUMFORD, Lewis, *The Future of technics & civilisation.* London: Freedom, 1986.

NYE, David E. (ed.) *Technologies of Landscape*. The MIT Press. Cambridge MA 1999.

ROSENBERG, Nathan, *The Economics of Technological Change.* Penguin Books. London 1971.

ROSENBERG, Nathan, "Technology and the Environment: An Economic Explanation", *Technology and Culture*, 12, 1971, 543-561.

ROSZAK, Theodore, *The cult of information : the folklore of computers and the true art of thinking*, Cambridge: Lutterworth, 1986.

ROSZAK, Theodore, *The Making of a counter culture: reflections on the technocratic society and its youthful opposition***.** Berkeley : University of California Press, 1995.

ROSZAK, Theodore, *Person/planet : the creative disintegration of industrial society***.** Garden City : Anchor Press/Doubleday, 1978.

ROSZAK, Theodore, *The Voice of the earth : an exporation of ecopsychology : with a new afterword by Theodore Roszak*. Grand Rapids : Phanes, 2001.

SHORTLAND. M. (ed.) *Science and Nature. Essays in the History of the Environmental Sciences*. BSHS Monographs. Oxford 1993.

STINE, Jeffrey K., TARR, Joel A., "Essay: At the Intersection of Histories. Technology and the Environment", *Technology and Culture*, 39 (4), 1998, 601-640.

STINE, Jeffrey K., TARR, Joel A., *Environmental History Review. Especial Issue on Technology, Pollution and the Environment.* n. 18, 1994.

WALL, Derek, *Green History. A reader in environmental literature, philosophy and politics.* Routledge, London, New York 1994.

WORSTER, Donald, "The two cultures revisited: environmental history and the environmental sciences", *Environment and History*, 2(1), 1996, 3-14

WORSTER, Donald. *Nature's Economy: A History of Ecological Ideas*. Cambridge University Press. Cambridge 1985.

WORSTER, Donald. *The Ends of the Earth. Perspectives on Modern Environmental History*. Cambridge University Press. Cambridge 1988.

WORSTER, Donald, *The Wealth of nature: environmental history and the ecological imagination***.** New York: Oxford University Press, 1993.