

Degree	Type	Year	Semester
4313784 Interdisciplinary Studies in Environmental, Economic and Social Sustainability	OT	0	1

## Contact

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## Use of languages

Principal working language: english (eng)

## Teachers

Jeroen Van Den Bergh  
Gonzalo Gamboa Jimenez

## Prerequisites

No aplica.

## Objectives and Contextualisation

The course will introduce the field of ecological economics, paying attention to theoretical, methodological and empirical issues. Classic themes, important debates and recent research foci will receive attention. Valuation methods that cut across ecological and environmental economics will also be explored.

At the end of the course the student is expected to have a good understanding of:

1. The main themes, theories and methods addressed by ecological economics, including: the origins and principles of ecological economics, the idea of welfare and externalities, environmental and climate policy instruments, complex systems, environmental governance and conflicts, environmental and multi-criteria valuation, ecosystem services and the growth/degrowth debate;
2. The basic literature regarding ecological economics;
3. The essential differences between the way environmental problems and solutions are approached in environmental economics and ecological economics;
4. New methods that have been proposed by, and are applied within, ecological and environmental economics, such as environmental valuation methods, multi-scale integrated assessment, and social multi-criteria evaluation.

## Skills

- Apply knowledge of environmental and ecological economics to the analysis and interpretation of environmental problem areas.
- Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
- Communicate orally and in writing in English.
- Continue the learning process, to a large extent autonomously
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.

- Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
- Work in an international, multidisciplinary context.

## Learning outcomes

1. Adopt a holistic perspective on the relationship between the economy and biophysical systems.
2. Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
3. Communicate orally and in writing in English.
4. Continue the learning process, to a large extent autonomously
5. Differentiate between the approaches to environmental problems of environmental and ecological economics.
6. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
7. Know the role of the institutions in environmental governance.
8. Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
9. Work in an international, multidisciplinary context.

## Content

The FEE course involves a series of 3-hour lectures organised in four main sub-modules under the responsibility of specific teachers. Some teachers may provide slides in advance through the CV but others may not. All readings need to be found by the student from internet and academic library sources (e.g. Scopus, Web of Knowledge) available on the UAB campus.

### Sub-Module 1: Foundations, Policy & Innovation (JvdB)

History and principles of ecological economics (18<sup>th</sup> Oct)

Welfare, markets, externalities and public goods (20<sup>th</sup> Oct)

Environmental policy instruments (25<sup>th</sup> Oct)

Theories and methods of environmental valuation (27<sup>th</sup> Oct)

Economics of climate policy (3<sup>rd</sup> Nov)

The ecological footprint and spatial sustainability (8<sup>th</sup> Nov)

Behavioural economics and environmental policy (10<sup>th</sup> Nov)

The environment-versus-growth debate (15<sup>th</sup> Nov)

Essay & dissertation writing (17<sup>th</sup> Nov)

### Sub-Module 2: Methods for integrated assessment (GG)

Multi-scale integrated assessment (22<sup>nd</sup> Nov)

Social multi-criteria evaluation - SMCE (24<sup>th</sup> Nov)

SMCE in practice (29<sup>th</sup> Nov)

### Sub-Module 3: Institutional Aspects (EC)

Institutional economics and environmental governance (1<sup>st</sup> Dec)

Property and access theory, incl. case study (13<sup>th</sup> Dec)

(Mis)trust and cooperation: a game (15<sup>th</sup> Dec)

### Sub-Module 4: Ecosystem Services Issues and Public Policies (EC)

Commodification of ecosystem services (20<sup>th</sup> Dec)

Payments for ecosystem services and environmental offsets, incl. case studies (22<sup>nd</sup> Dec)

REDD+, incl. case study (10<sup>th</sup> Jan)

Final exam (12<sup>th</sup> Jan)

## Methodology

Lecturers will present a given topic and students will be expected to prepare for the class reading in advance the compulsory readings suggested in the bibliography. Lectures will involve time for questions and answers and for discussion; they might also involve role-play exercises and video-material. Presentation and essays preparation will involve group and individual work, respectively.

## Activities

Title	Hours	ECTS	Learning outcomes
<b>Type: Directed</b>			
Lectures	54	2.16	6, 4
Presentation and discussion in class	8	0.32	3, 2, 6, 4, 9
<b>Type: Autonomous</b>			
Reading articles, books and studying for each of the given lectures and the final exam	100	4	7, 1, 5, 6, 4, 9
1 short and 2 longer essays, which involve reading the necessary literature to write the essays	60	2.4	8, 6, 4, 9

## Evaluation

Students will be assessed on the basis of a written, closed-book exam; and three written essays:

The final exam will contribute towards 50% of the final mark. The exam will take place on the 12<sup>th</sup> January 2017, from 10 to 13:00 hours. It will cover aspects of each module of the course. Students will have limited space to answer each of these questions and will have to show that they have understood and mastered key concepts and ideas introduced during the course. The contributing teachers will evaluate the exam together.

A 500-words personal statement focused on the environment-versus-growth debate, and to be submitted in class and to Jeroen van den Bergh by 15<sup>th</sup> November 2016, contributing to 10% of the final mark.

A 1500-words multi-criteria exercise report, to be submitted by email to Gonzalo Gamboa by 15<sup>th</sup> December 2016, and contributing to 20% of the final mark:

Choose a socio-environmental conflict and develop a multi-criteria structure of the problem. This includes describing the problem/conflict and the actors involved, their objectives and positions in the conflict. Based on the priorities of the different actors, develop a set of alternatives to be compared, the attributes and the evaluation criteria. Also, choose a multicriteria method to compare the alternatives and justify your choice.

A 1500-words argumentative essay, to be submitted by email to Esteve Corbera by 12<sup>th</sup> January 2017, and contributing to 20% of the final mark:

Discuss critically the following statement: "REDD+ strategies and projects have potential to realise environmental justice at global, national and local scale".

## Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Final exam	50%	3	0.12	8, 3, 7, 1, 5, 2, 6, 4, 9
1 short and 2 longer essays	50%	0	0	8, 3, 7, 5, 2, 6, 4, 9

## Bibliography

(\*) Lectures obligatòries

### 1. History and principles of Ecological Economics

(\*) van den Bergh, J.C.J.M. 2000. Ecological Economics: Themes, Approaches, and Differences with Environmental Economics. *Regional Environmental Change*, 3(1): 13-23.

Martinez-Alier, J., Roca Jusmet, J. 2000. *Economía Ecológica y Política Ambiental*. PNUMA y Fondo de Cultura Económica.

Ropke, I. 2005. Trends in the development of ecological economics from the late 1980s to the early 2000s. *Ecological Economics*, 55: 262- 290.

### 2. Welfare, markets, externalities and public goods

(\*) Kahn, J.R. 2004. *The Economic Approach to Environmental and Natural Resources*. 3rd edition, Thomson/South-Western, Fort Worth, Mason, Ohio. ch. 2; & ch. 4, section "What is Value".

(\*) Verhoef, E.T. 1999. Externalities. Chapter 13 in: J.C. J.M. van den Bergh (ed.). *Handbook of Environmental and Resource Economics*. Edward Elgar, Cheltenham, pp. 197-214.

### 3. Environmental policy instruments

(\*) Russell, C.S., Powell, P.T. 1999. Practical considerations and comparison of instruments of environmental policy. Chapter 21 in: J.C.J.M. van den Bergh (ed.). *Handbook of Environmental and Resource Economics*. Edward Elgar, Cheltenham, pp. 307-328.

Sterner, T. 2003. Policy Instruments for Environmental and Natural Resource Management. Resources for the Future (RFF Press), Washington D.C., USA, 504 pages.

#### **4. Theories and methods of environmental valuation**

(\*) Perman et al., Valuing the Environment, Chapter 4 in Natural Resource and Environmental Economics

Hanley, N., Spash, C.L. 1993. Cost-Benefit Analysis and the Environment. Edward Elgar Publishers, Aldershot.

Martinez-Alier, J., Munda, J., O'Neill, J. 1998. Weak comparability of values as a foundation for ecological economics. Ecological Economics, 26: 277-286.

#### **5. Economics of climate policy**

(\*) Executive summary of The Stern review: The Economics of Climate Change (2006).

[http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/30\\_10\\_06\\_exec\\_sum.pdf](http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/30_10_06_exec_sum.pdf)

(\*) McKibbin, W.J., Wilcoxon, P.J. 2002. The role of economics in climate change policy. Journal of Economic Perspectives 16(2): 107-129.

J.C.J.M. van den Bergh (2010). Safe climate policy is affordable - 12 reasons. Climatic Change 101(3): 339-385.

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Tol, R.S.J. (2009). The economic effects of climate change. Journal of Economic Perspectives 23(2): 29-51.

#### **6. The ecological footprint and spatial sustainability**

(\*) J.C.J.M. van den Bergh and F. Grazi (2014). Footprint Policy? Land Use as an Environmental Indicator. Journal of Industrial Ecology 18(1): 10-19.

with response by Wackernagel in the journal and on the web, and replies by van den Bergh/Grazi in same journal and journal Ecological Indicators (2015).

Grazi, F.; van den Bergh, J. and P. Rietveld .2007. Spatial welfare economics versus ecological footprint: Modeling agglomeration, externalities and trade. Environmental and Resource Economics 38: 135-153.

#### **7. Behavioral economics and environmental policy**

(\*) E. Gsottbauer and J.C.J.M. van den Bergh (2011). Environmental policy theory given bounded rationality and other-regarding preferences. Environmental and Resource Economics 49(2): 263-304.

#### **8. The environment-versus-growth debate**

(\*) Beckerman, W. 1992. Economic growth and the environment. World Development, 20(4): 481-496.

(\*) Daly, H.E. 2005. Economics in a full world. Scientific American 293(3).

(\*) van den Bergh, J., de Mooij, R. 2002. Growth and the environment in Europe: a guide to the debate. Empirica, 29: 79-91.

Kallis, G. 2011. In defence of degrowth. Ecological Economics, 70(5): 873-880.

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#### **10. Multi-scale integrated assessment**

(\*) Giampietro, Mario; Mayumi, Kozo; Ramos-Martin J., 2009. Multi-scale integrated analysis of societal and ecosystem metabolism (MuSIASEM): Theoretical concepts and basic rationale. *Energy* 34(3), pp.: 313-322

Ramos-Martín J., Cañellas-Boltà S., Giampietro M., Gamboa G., 2009. Catalonia's energy metabolism: Using the MuSIASEM approach at different scales. *Energy Policy*, vol 37, (2009), p 4658-4671.

TatjerM. , Gamboa G. 2015. Análisis del metabolismo del sistema socio-económico español: 2002-2012 . Manuscript submitted to *Revista Iberoamericana de Economía Ecológica* (Available at Campus Virtual)

Siciliano G., 2012. Urbanization strategies, rural development and land use changes in China: A multiple-level integrated assessment. *Land Use Policy* Vol 29(1): Pp 165-178

Gamboa G., Di Masso M., Mingorria S., Kovacic Z, Gomiero T., Rivera-Ferre M., Giampietro M. 2016. The complexity of food systems: Defining relevant attributes and indicators for the evaluation of food supply chains. Submitted to *Sustainability*.

## **11. Social multi-criteria evaluation - SMCE**

(\*) Munda G. Social multi-criteria evaluation: methodological foundations and operational consequences. *European Journal of Operational Research*;Vol 158(3): Pp 662-677.

Munda G., 2008. Chapter 6: The Issue of Consistency: Lessons Learned from Social Choice Literature. In Munda G., *Social Multi-Criteria Evaluation for a Sustainable Economy*. Springer-Verlag Berlin Heidelberg 2008

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Proctor W, Drechsler M. Deliverative multicriteria evaluation. *Environmental and Planning C: Government and Policy* Vol 24:Pp. 169-190

## **12. SMCE in practice**

(\*) Garmendia, E., Gamboa, G., Franco, J., Garmendia, J., Liria, P., Olazábal, M., 2010a. Social multi-criteria evaluation as a decision support tool for integrated coastal zone management. *Ocean and Coastal Management* 53, 385-403

(\*) Dente et al. (1998). A theoretical framework for case study analysis, in: Dente, Fareri & Ligteringen (eds.), *The waste and the backyard*, Dordrecht: Kluwer, pp. 197-223.

Gamboa, G., Munda, G., 2007. The problem of windfarm location: a social multi-criteria evaluation framework. *Energy Policy* 35, 1564-1583

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Mitchell et al, 1997. Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *The Academy of Management Review*, Vol. 22(4)., pp. 853-886

SAS2, 2013. Handbook for Participatory Action Research, Monitoring and Evaluation. SAS2 Dialogue, Ottawa. Available at: <http://www.participatoryactionresearch.net/content/tools-and-software>

## **13. Institutional economics and environmental governance**

(\*) Aguilera-Klink, F. 1994. Some notes on the misuse of classic writings in economics on the subject of common property. *Ecological Economics*, 9(3): 221-228.

(\*) Hardin, G. 1968. The tragedy of the commons. *Science* 162: 1243-1248.

Feeny, D., Berkes, F., McCay, B.J. y J.M. Atcheson, 1990. The tragedy of the commons - 22 years later. *Human Ecology*. 18: 1-19.

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Ostrom, E. 2003. How types of goods and property rights jointly affect collective action. *Journal of Theoretical Politics* 15(3): 239-270.

Ostrom, E., 2005. *Understanding Institutional Diversity*. Princeton University Press, Princeton & Woodstock.

Vatn, A., 2005. *Institutions and the Environment*. Edward Elgar, Cheltenham, UK and Northampton, USA.

#### **14. Property and Access Theory**

(\*) Ribot, J., Peluso, N. 2003. A Theory of Access. *Rural Sociology*, 68(2): 153-181.

(\*) Schlager, E. and E. Ostrom, E. 1992. Property-Rights Regimes and Natural Resources: A Conceptual Analysis. *Land Economics*, 68(3): 249-262

Sikor T., Lund C., 2009. Access and property: a question of power and authority. *Development and Change* 40(1): 1-22.

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#### **15. Mis(trust) and cooperation: a game**

(\*) Markets, Religion, Community Size and the Evolution of Fairness and Punishment. *Science* 327, 1480: doi: 10.1126/science.1182238

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#### **16. Commodification of ecosystem services**

(\*) Gómez-Baggethun, E., Ruiz-Pérez, M. 2011. Economic valuation and the commodification of ecosystem services. *Progress in Physical Geography*, 35: 617 - 632.

(\*) Kosoy, N., Corbera, E. 2010. Payments for ecosystem services as commodity fetishism. *Ecological Economics*, 69: 1228-1236.

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## **17. Payments for Ecosystem Services and Environmental Offsets**

(\*) Muradian, R., Corbera, E., Pascual, U., Kosoy, N., May, P. 2010. Reconciling theory and practice: An alternative conceptual framework for understanding payments for environmental services. *Ecological Economics*, 69: 1202-1208.

(\*) Valuing nature, paying for ecosystem services and realizing social justice: A response to Matulis. *Ecological Economics*, doi: 10.1016/j.ecolecon.2014.12.017

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## **18. REDD+**

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