

Degree	Type	Year
Economics	OT	3
Economics	OT	4

Contact

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Teachers

Facund Foral Alcalde

Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

None established.

Objectives and Contextualisation

The objective of the subject is twofold, on the one hand, to understand the basic concepts of economics that have to allow us, on the other, to understand human systems as open systems for the entry of energy and materials and the exit of waste. In other words, the biophysical functioning of economies is studied, which is known as "social metabolism" and the role that natural resources have in maintaining the economic system.

The course also studies the application of economic theory to the analysis and management of natural resources. Decisions on renewable and exhaustible natural resources and on pollution can be based on the balance of monetary costs and benefits. But this approach has limitations. For this reason, the alternative of multi-criteria evaluation of resource management decisions is also proposed.

Competences

- Economics
 - Analyse quantitative and qualitative information referring to economic phenomena and variables.

- Capacity for adapting to changing environments.
- Identify the environmental and social impacts associated with economic activity.
- Lead multidisciplinary and multicultural teams, implementing new projects and coordinating, negotiating and managing conflicts.
- Organise the work in terms of good time management, organisation and planning.
- Select and generate the information necessary for each problem, analyse it and take decisions based on that information.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills in order to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.

Learning Outcomes

1. A capacity of oral and written communication in Catalan, Spanish and English, which allows them to summarise and present the work conducted both orally and in writing.
2. Analyse the different interpretations and solutions considered to deal with the problems associated with the sustainability of economic systems, from different theoretical perspectives.
3. Apply the main methods to assess projects.
4. Capacity to adapt to changing environments.
5. Create transverse and longitudinal tables of demographic behaviour and other social phenomena, and interpret the main synthetic indicators used.
6. Examine some of the consequences of demographic fluctuations and the changes in the age structure on the labour market and the structure of the demand of goods and services.
7. Identify the energy and food changes that have taken place during the contemporary economic growth.
8. Identify the main current environmental problems, and their relationship with population growth and the current models of economic development.
9. Know how to correctly use the analytical concepts of ecological economy, and the instruments of environmental economic policy.
10. Lead multidisciplinary and multicultural teams, implement new projects, coordinate, negotiate and manage conflicts.
11. Organise work, in terms of good time management and organisation and planning.
12. Perform an integrated analysis of the economic, demographic, social and ecological variables, on the basis of different historical experiences.
13. Recognise the effects of age, generation and momentum on demographic and social behaviour.
14. Recognised the biophysical aspects related to the economic activity.
15. Relate the international economic and ecological aspects in the different phases of contemporary economic growth.
16. Select and generate the information needed for each problem, analyse it and make decisions based on this information.
17. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
18. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
19. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
20. Students must develop the necessary learning skills in order to undertake further training with a high degree of autonomy.
21. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.

22. Understand the economic and political debates about the evolution of demographic growth and migration.
23. Use standardisation methods to isolate the effects of structure on the added indicators.

Content

1. Introduction. The economy as an open subsystem within the biosphere

The environment within the economy
 Environmental economics and ecological economics
 Main economic figures and aggregates
 The income cycle and the generation of added value
 Natural resources in the economic process
 The laws of thermodynamics and their economic interpretation

Basic reading: [Martínez Alier y Roca Págs. 14-26, 90-127, 448-505, 572-577](#); [Pérez-Rincón 2024](#); [Puig Ventosa and Martínez Sánchez 2023](#); [Harris 2023](#).

Complementary reading: [Ramos-Martin 2004](#), [Gómez-Baggethun 2012](#); [Daly 1995](#); [Kallis 2023](#); [Villarraga 2023](#).

2. Monetary evaluation and the environment

Ecological value and economic value
 Families of economic valuation methods
 Total economic value
 Discount rate

Basic reading: *Martínez Alier y Roca Págs. 228-319.*

Complementary reading: Agüero et al. 2005; Romero 1997: 51-76.

3. Instruments of environmental economic policy

Externalities
 Optimal level of pollution
 Internalization of externalities
 Pigou and green taxation
 Coase and the emission rights market
 Payment for environmental services

Basic reading: *Martínez Alier y Roca Págs. 128-227.*

Complementary reading: Martínez y Kosoy 2007; Puig y Freire 2007; Romero 1997: 29-50.

4. Cost-benefit analysis

Economic and political democracy
 Arrow's impossibility theorem
 Kaldor-Hicks compensation criterion
 Relationship between efficiency and equity
 Risk, uncertainty and irreversibility

Basic reading: Martínez Aliet y Roca Págs. 228-319.

Complementary reading: Munda 1996, Riera 1992, Riera y Macian 1999.

5. Multi-criteria evaluation

Methodological foundations (substantive and procedural rationality, complexity and post-normal science).
Structuring of a multi-criteria problem (alternatives and criteria, weighting of the criteria).
Main discrete multi-criteria approaches (Utility approach, MAUT; Improvement methods; NAIAD).
Examples

Basic reading: Munda 2004; Funtowicz and Ravetz 2003.

Complementary reading: Falconí y Burbano 2004; Martí et al., 2000; Comas et al., 2012.

6. Ownership and access to natural resources

Typology of property rights and their relationship with the management of natural resources
Governance of the Commons: Theory and Examples. Hardin's Tragedy of the Commons
Processes of access and exclusion to natural resources
Examples: global commons (sea and atmosphere), biopiracy, land-grabbing

Basic reading: Martínez Aliet y Roca Págs. 419-423; Aguilera 1992.

Complementary reading: GRAIN 2014; D'Alisa 2013.

7. Analysis of non-renewable resources

Resource base and reserves
The Hubbert curve
Hotelling's rule: optimal resource extraction path
Backstop technologies
The rule of El Serafy
EROI or energy rate of return on energy investment
Nuclear energy, waste, time and discount

Basic reading: Martínez Aliet y Roca Págs. 106-114, 370-405.

Complementary reading: Romero 1997: 77-102; Espinoza et al., 2019.

8. Analysis of renewable resources

Sustainable performance. Biological vs economic models
Forest economics: technical forestry shift; Faustmann's rule; forest environmental services
Fisheries economics: biological model and economic model

Basic reading: Martínez Aliet y Roca Págs. 406-447.

Complementary reading: Romero 1997: 103-159.

9. Trade and environment

Determinants of trade: absolute and relative advantages
Governance of international trade (WTO)
Environmental implications of international trade

Unequal exchange, unequal ecological exchange, and unequal caloric exchange
The examples of ecological debt and carbon debt

Basic reading: *Martínez Alier y Roca Págs. 81-85, 506-522, 528-532; Samaniego et al. 2015; Pérez-Rincón 2007.*

Complementary reading: Falconí et al., 2017; Ramos-Martin et al., 2017; UNCTAD 2022; Pérez 2006; Espinoza et al., 2016; Peinado 2018.

10. Economics and governance of biodiversity

The timeline of biodiversity governance: from the Convention on Biological Diversity (1992) to the Nagoya Protocol (2010)

The generation of value from biodiversity (appropriation mechanisms)

Nagoya Protocol and the Multilateral System of Access to Genetic Resources

Fair and equitable distribution derived from access to genetic resources: monetary and non-monetary benefits

Basic reading: *Martínez Alier y Roca Págs. 558-571; Níjar 2011.*

Complementary reading: Vogel 2004; Reyes 1996.

11. Economics and governance of climate change

Greenhouse effect and global warming

Climate change governance (UNFCCC and IPCC)

Kyoto Protocol, Paris Agreement, National Communications and NDC

Compliance mechanisms: emissions markets, clean development mechanism, joint implementation.

Basic reading: *Martínez Alier y Roca Págs. 81-85, 540-558; Ramos-Martin 2001.*

Complementary reading: Falconí et al., 2019; Fernández-Reyes 2016; CEPAL 2015.

12. Analysis of the metabolism of societies

Endosomatic and exosomatic energy consumption

Exosomatic evolution of societies (Peak Oil)

Input-Output Analysis

Material Flow Analysis

Energy analysis, energy accounting, eMergy, exergy

Multiscale Analysis of the Metabolism of Societies (MuSIASEM)

Basic reading: *Martínez Alier y Roca Págs. 47-89; Eisenmenger et al., 2007; Ramos-Martin 2012.*

Complementary reading: Vallejo 2006; Moncada 2006; Pérez 2006; Muñoz y Roca 2006; Madrid y Velázquez 2008; Velasco-Fernández et al. 2015; Toledo 2008; Guzmán y González de Molina 2008; Tello et al., 2008; González et al., 2015; Giampietro 2023.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Master classes and class debates	32.5	1.3	12, 4, 13, 7, 10, 11, 15

Practical sessions: Development of group work, presentation and discussion in class	17	0.68	8, 11, 15, 16
Type: Supervised			
Tutorials	15	0.6	3, 4, 1, 5, 6, 14, 16, 9, 23
Type: Autonomous			
Reading and theory study	68	2.72	2, 5, 13, 22, 6, 14, 16, 9, 23
Search for information	12.5	0.5	4, 5, 11, 16, 23

1. Master class and guided debates

The teacher will perform an analytical conceptualization and an updated synthesis of each of the study topics shown in the teaching units. The aim of this activity is to facilitate the transmission of knowledge and motivation for the analysis of the relationship between human activity and the environment, which are focused in order to promote active and cooperative learning.

2. Practical sessions

The practical sessions will consist of presentations and the semi-structured discussion that defines the group. This activity will also serve to relate the fundamental concepts of the subject and give proposals for resolving conflicts both from the perspective of Environmental Economics and from the perspective of Ecological Economics.

3. Tutorials

The learning process and acquisition of skills will be supervised by the teacher through individual and / or group tutorials. The teacher will be available to students to resolve doubts and follow the evolution of the aforementioned process of learning and acquisition of skills of students.

4. Virtual Campus of the subject

Inface-to-face teaching, the Virtual Campus is a useful tool, so that students have a complementary space where they can access different types of materials that the teacher considers basic to advance in the learning process of the subject. To access it, all you have to do is go to the UAB website and there you will find the link, or directly to the website of the virtual campus (<https://cv.uab.cat/portada/ca/>).

5. Use of AI

Model 2 - Restricted Use: For this subject, the use of Artificial Intelligence (AI) technologies is permitted exclusively in bibliographic searches and correction of texts or translations. The student must identify which parts have been generated using this technology, specify the tools employed, and include a critical reflection on how these tools have influenced the process and the final result of the activity. The lack of transparency in the use of AI in this assessable activity will be considered a breach of academic honesty. It may result in a partial or total penalty for the activity, or more severe sanctions in serious cases.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final essay	30	1	0.04	12, 2, 3, 4, 1, 5, 13, 22, 6, 7, 8, 10, 11, 20, 19, 18, 14, 15, 16, 9, 23
First partial exam	35	2	0.08	12, 2, 4, 7, 8, 10, 11, 21, 17, 15
Second partial exam	35	2	0.08	3, 4, 1, 5, 13, 22, 6, 11, 21, 17, 14, 16, 9, 23

CONTINUOUS EVALUATION

The evaluation of the subject will be based on a continuous evaluation of the process of acquisition of knowledge and skills by the student and will consist of:

- 2 partial knowledge exams that may combine multiple choice and thematic questions and that will count for 35% of the final grade each.

- A final essay, which will count for 30% of the final grade.

Students who do not submit one of the assignments, and/or do not attend one of the partial exams will have a final grade of "NOT ASSESSABLE"

Students may request a review of their final grade at the session established for this purpose, and communicated together with their final grades.

COMPREHENSIVE EVALUATION

By requesting the comprehensive evaluation the student waives the option of continuous evaluation.

The comprehensive evaluation must be requested at the Academic Management (Gestió acadèmica) of the Campus where the degree/master's degree is taught. The request must be filed according to the procedure and the deadline established by the administrative calendar of the Faculty of Economics and Business.

- *Student attendance is mandatory on the day of the comprehensive assessment. The date will be the same as that of the final exam of the semester as per the evaluation calendar published by the Faculty of Economics and Business and approved by the Faculty's Teaching and Academic Affairs Committee. The duration of the comprehensive assessment must be specified in the characteristics of such activity.*
- *100% of the evaluation evidences must be handed in by the student on the day of the comprehensive assessment.*
- *The evaluation evidences carried out in person by the student on the same day of the comprehensive assessment must have a minimum weight of 70%.*

Evidence Type	Weight in the final assessment (%)	Duration of the activity	Is the activity that corresponds to this evaluation evidence to be carried out in person on the date scheduled for the comprehensive evaluation? (YES/NO)
Exam	70%	3h	Yes
Essay	30%		No

Students who do not submit the assignment, and/or do not attend the exam, will have a final grade of "NOT ASSESSABLE"

The review of the final grade follows the same procedure as for continuous assessment.

RESEAT

For the retake procedure, no distinction is made between students who have followed the continuous evaluation and those who have opted for the comprehensive evaluation. All will be re-assessed using the same test or evaluation evidence. Suppose students do not pass the course, either through the continuous evaluation or the comprehensive evaluation. In that case, they will have another opportunity to pass the course through the reseat exam, which will be held on the date set by the degree coordination. In this test, you can recover 70% of the grades corresponding to the theory and seminars. The written assignment will not be recoverable. If a minimum grade of 3 is achieved, this grade will be averaged with the grade obtained in the written essay, taking into account the 70% weighting for the exam and 30% for the essay.

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Software

There is no need for specific software.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	51	Catalan/Spanish	first semester	afternoon
(TE) Theory	51	Catalan/Spanish	first semester	afternoon