

**Economics of Natural Resources and Climate Change**

Code: 104653  
ECTS Credits: 6

Degree	Type	Year	Semester
2501573 Economics	OT	3	2
2501573 Economics	OT	4	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

### Contact

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### Use of Languages

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

### Teachers

Roc Padro Caminal

### Prerequisites

They have not been established. The contents are complementary to the subject Economics of the Environment.

### Objectives and Contextualisation

The course has a double objective: on the one hand to present the main issues raised by the vision of the Economics of Natural Resources and on the other hand to see the place that this vision occupies in the current economic system. The answers to the two objectives will be frameworked under the two main conceptual approaches in the field: the Environmental Economy and the Ecological Economy.

The first part of the course will focus on the study of the main current ecological problems, the fundamental notions of environmental impacts, their relationship with social conflicts, the concept of "sustainable development", the identification of some macroeconomic tools to include environment on the GDP. and the explanation of the main existing economic instruments to deal with environmental impacts. In the second part of the course we will explain the fundamentals for the socioeconomic management of natural resources and environmental impacts. We will discuss on the current concepts and key debates on environmental impact assessment, non-renewable resource management, renewable resource management and local and global emergency policies such as climate change.

The aim is to provide with basic and applied notions about natural resources, the risks associated with their management and their main ecological characteristics, glimpse the role they will play in the near future and identify possible solutions considering the economy as an open and complex system. All this encouraging the critical debate on current issues that allow to contextualize the relevance of natural resources in a globalized and multipolar world.

## 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.

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

## Content

### 1. ECONOMY, POPULATION AND NATURAL RESOURCES

#### 1.1 Current context, from the first oil crisis to 2020

#### 1.2 Thermodynamic principles and economics

#### 1.3 The endosomatic and exosomatic use of energy by humans

#### 1.4 Relationship between inequalities, poverty and environmental degradation

## 2. SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

2.1 Weak and strong sustainability

2.2 Basic notions of environmental impacts

2.2 Demographics and load capacity

2.3 Theories of needs and satisfiers

2.4 Economic growth and sustainable development

2.5 The safe environmental space and doughnut economics

2.6 Multicriteria analysis, potentials and limits

## 3. MACROECONOMIC ACCOUNTING

3.1 The role of Natural Resources in the GDP

3.2 Ecologically corrected GDP proposals

3.3 Other indicators of human well-being and ecological status

## 4. ENVIRONMENTAL POLICY INSTRUMENTS

4.1 Private costs and social costs

4.2 Quantitative limits and taxes on pollution

4.3 Marketable pollution permits

4.4 Subsidies

4.5 Recycling and reuse

## 5. ENVIRONMENTAL ASSESSMENT PROBLEMS

5.1 The concept of "discount of the future", arguments and criticisms

5.2 Risk and uncertainty

5.3 Krutilla's criterion

5.4 The value of environmental goods

5.5 Valuation methods: trip cost method, hedonic prices and contingent valuation

## 6. EXPLOITATION OF NON-RENEWABLE RESOURCES

6.1 Non-renewable natural resources

6.2 The Hotelling Rule

6.3 The management of energy resources

6.4 The Green New Deal and the energy transition

6.5 The management of metalliferous mineral resources

6.6 The management of non-metalliferous mineral resources

## 7. EXPLOITATION OF RENEWABLE RESOURCES

- 7.1 Renewable natural resources and growth models
- 7.2 Sustainable fisheries management
- 7.3 Sustainable forest management and fires
- 7.4 Sustainable agricultural management and ecosystem services
- 7.5 Other renewable resources
- 7.6 Forms of ownership and environmental sustainability
- 8. GLOBAL CHALLENGES, CLIMATE CHANGE AND PANDEMICS
- 8.1 From global environmental change to climate emergency
- 8.2 Climate change, current trends, feedback and forecasts
- 8.3 Global and local climate change policies
- 8.4 Globalization and health emergency

## **Methodology**

Teaching will be offered on campus for all the group.

### 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.

At the same time, short readings will be proposed during the course (around one every two classes), made mostly within the teaching schedule, in order to delve into certain concepts, place theories in current socio-environmental contexts, and generate a useful debate among the attendees that allows to raise also the doubts, to apply theories and concepts and to consolidate knowledge.

### 2. Practical sessions

The practical sessions will consist of presentations of group work 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.

Also, during the process of elaboration of the works there will be at least a tutorial of presentation of the tasks carried out, in the middle of the process of elaboration of the work, in order to guarantee that the students take the maximum profit of the same and the subsequent discussion with the rest of the students may be more fruitful.

### 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/>).

The proposed teaching methodology may undergo some modifications according to the restrictions imposed by the health authorities on on-campus courses

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Master classes and class debates	33	1.32	12, 4, 13, 7, 10, 11, 15
Practical sessions: Development of group work, presentation and discussion in class	11.5	0.46	8, 11, 15, 16
Type: Supervised			
Tutorials	15	0.6	3, 4, 1, 5, 6, 14, 16, 9, 18
Type: Autonomous			
Reading and theory study	68	2.72	2, 5, 13, 17, 6, 14, 16, 9, 18
Search for information	17.5	0.7	4, 5, 11, 16, 18

## Assessment

### Evaluation

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

- 2 partial exams of knowledge that will combine the questions type test and thematic, and that each will be worth 35% of the final note.
- Presentation and elaboration of the group work that will count 30% of the final mark, and that will be evaluated by the teacher and through peer evaluation.

### Calendar of evaluation activities

The dates of the different assessment tests (partial exams, assignments and discussion sessions ...) will be announced well in advance during the semester.

The date of the second exam of the subject is scheduled in the calendar of evaluation of the Faculty.

"The calendar of evaluation activities may not be modified, unless there is an exceptional and duly justified reason why an assessment act cannot be carried out. In this case, the persons responsible for the qualifications, after consulting the teachers and students affected, will propose a new program within the corresponding school period. "

*Section 1 of Article 115. Calendar of evaluation activities (UAB Academic Regulations)*

Students of the Faculty of Economics and Business who, in accordance with the previous paragraph, need to change an evaluation date must submit the application by filling in the document Request for rescheduling the test: [https://eformularis.uab.cat/group/deganat\\_feie/reprogramming-tests](https://eformularis.uab.cat/group/deganat_feie/reprogramming-tests)

#### Procedure for reviewing exams

Coinciding with the final exam will be announced the day and medium on which the final grades will be published. In the same way, the procedure, place, date and time of the revision of exams in accordance with the regulations of the University will be informed.

#### Second-chance Examination

"To participate in the second-chance examination students must have been previously assessed in a set of activities that represent a minimum of two-thirds of the total grade of the subject or module."

*Section 3 of Article 112. Second-chance examination (UAB Academic Regulations).*

Students have obtained an average grade of between 3.5 and 4.9. The date of this test will be scheduled in the calendar of examinations of the Faculty. The student who presents and passes it will pass the subject with a grade of 5. Otherwise he will keep the same grade.

#### Irregularities in evaluation acts

Without prejudice to other disciplinary measures deemed appropriate, and in accordance with current academic regulations, "in the event that the student commits any irregularity that may lead to a significant variation in the grade of an assessment act, this assessment act will be graded with 0, regardless of the disciplinary process that may be instructed in it. 0".

*Section 10 of Article 116. Results of the evaluation. (UAB Academic Regulations)*

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## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
First partial exam	35	2	0.08	12, 2, 4, 7, 8, 10, 11, 15
Reporting the group work	30	1	0.04	12, 2, 3, 4, 1, 5, 13, 17, 6, 7, 8, 10, 11, 14, 15, 16, 9, 18
Second partial exam	35	2	0.08	3, 4, 1, 5, 13, 17, 6, 11, 14, 16, 9, 18

## Bibliography

### Subject handbook

Alier, J.M., Roca, J. 2000. *Economía ecológica y política ambiental*. Fondo de Cultura Económica, Mexico. (Disponible a Google Books)

### Useful bibliography, some recommended readings

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Aretxabala, 2018. El hormigón armado, icono del capitalismo fosilista. *Revista 15-15-15*. Disponible a: <https://www.15-15-15.org/webzine/2018/08/27/el-hormigon-armado-icono-del-capitalismo-fosilista/>. Consultat a 02.07.2020.

Fernández Durán, R., González Reyes, L. 2015. *En la espiral de la energía*. Libros en Acción, Madrid.

García-Muros, X. 2018. "Si una medida se percibe socialmente injusta será más difícil poder aplicarla". Entrevista *Diari Gara* 12/08/2018. pp.2-3

González de Molina, M., Soto, D., Garrido, F. 2015. Los conflictos ambientales como conflictos sociales. Una mirada desde la ecología política y la historia. *Ecología Política* 50: 31-38

Meadows, D., Randers, J., Meadows, D. 2006. *Los límites del crecimiento. 30 años después*. Galaxia Gutenberg, Barcelona.

Max-Neef, M., Elizalde, A., Hopenhayn, M. 1986. *Desarrollo a escala humana: una opción para el futuro*. Biblioteca CF+S, Santiago de Chile. Disponible a: [http://habitat.aq.upm.es/deh/adeh\\_7.html](http://habitat.aq.upm.es/deh/adeh_7.html). Consultat a 02.07.2020.

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Raworth, K. 2014. Definir un espacio seguro y justo para la humanidad. A: WorldWatch Institute (2014). "State of the World 2013: Is sustainability still possible?". Disponible a: [http://library.uniteddiversity.coop/More\\_Books\\_and\\_Reports/State\\_of\\_the\\_World/State\\_of\\_the\\_World\\_2013-Is\\_Su](http://library.uniteddiversity.coop/More_Books_and_Reports/State_of_the_World/State_of_the_World_2013-Is_Su) Consultat a 02.07.2020.

Santiago Muíño, E. 2018. Sueños de carbón, vínculos de petróleo y cuerpos de gas natural. A: Santiago Muíño, E., Herrero, Y., Riechmann, J., 2018. *Petróleo*. Arcadia, Madrid.