

Course guide

480USE002 - 480USE002 - Environmental and Ecological Economics

Last modified: 12/07/2026

Unit in charge: Barcelona School of Civil Engineering

Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.
709 - DEE - Department of Electrical Engineering.

Degree: MASTER'S DEGREE IN SUSTAINABILITY AND STRATEGIES FOR A JUST GLOBAL TRANSITION (Syllabus 2026). (Compulsory subject).

Academic year: 2026

ECTS Credits: 5.0

Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: José M. Gil Roig

Others: Zein Kallas
Jordi de la Hoz
Elena Martín

TEACHING METHODOLOGY

MD.1.- Active expository teaching (participatory master class).

MD.3.- Problem-based learning (PBL).

MD.4.- Case study.

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Self study	80,0	63.95
Hours large group	22,7	18.15
Hours small group	11,0	8.79
Hours medium group	11,4	9.11

Total learning time: 125.1 h

CONTENTS

ENVIRONMENTAL AND ECOLOGICAL ECONOMICS

Description:

Topic 1: Price Formation in an Market Economy

- Law of Demand
- Law of Supply
- Markets
- The elasticity

Topic 2: Supply and demand Models

- Maximum and minimum prices
- Taxes
- Black market
- Public pricing policies
- Foreign trade (tariffs)

Topic 3: The Consumer Equilibrium

- Utility Function
- Indifference Curves
- Demand function

Topic 4: production Function and costs

- Production function
- Function of short and long term costs

Topic 5: Perfect Competition

- Characteristics of perfect competition
- Equilibrio a corto plazo in the company and in the industry
- Long-term balance in the company and in the industry

Topic 6: The allocation of resources with environmental effects

This chapter addresses the problem of efficient resource allocation when environmental effects exist. The most relevant market failures are analyzed, such as externalities, public goods, the tragedy of the commons, and non-convexities, highlighting their implications for sustainability and economic management.

The problem of resource allocation, Market failures: externalities, public goods and the tragedy of the commons, non-convexities.

Topic 7: Environmental economic policy

This chapter analyses the main tools of environmental economic policy to correct externalities and promote sustainability, based on the Pigou approach and the Coase Theorem. Instruments such as taxes, subsidies and prohibitions (environmental taxation) are studied, as well as market mechanisms, pollution rights and voluntary agreements to incentivise responsible behaviour: Price modification (Environmental taxation): taxes, subsidies, prohibitions. Other instruments: market expansion, pollution rights, voluntary agreements.

Topic 8: Title: Valuation of environmental assets

This topic addresses the methods and foundations for valuing environmental goods and services, analyzing their economic, ecological and social importance. Direct and indirect valuation techniques are studied, as well as their application in decision-making for the sustainable management of natural resources.

Travel cost, hedonic prices, contingent valuation, choice experiments.

Topic 9: The electricity production market

- The importance of regulation in the electricity production market
- Physical processes and electricity production market
- Formation of prices in the reference wholesale electricity market

Topic 10: The electricity consumer and the final formation of prices

- The final consumer and the price structure
- Regulated costs and revenues of the electricity sector
- Types of contracting

**Related activities:**

Problem Solving

Full-or-part-time: 125h

Theory classes: 45h

Self study : 80h

GRADING SYSTEM

EXAMINATION RULES.

Example:

Exam topics 1-5 (E15) = 45%

Exam topics 6-8 (E68) = 40%

Exam topics 9- (E910) = 15%

Final grade (Nf): $0.45 \cdot E15 + 0.40 \cdot E68 + 0.15 \cdot E910$

Specification

The subject is divided into two large blocks, each of which will be evaluated through a partial exam at the end of each

BIBLIOGRAPHY

Basic:

- Nou llibre.

RESOURCES

Audiovisual material:

- Nom recurs. Resource