

61339 - Environment, Growth and Industrial Ecology

Syllabus Information

Academic year: 2023/24

Subject: 61339 - Environment, Growth and Industrial Ecology

Faculty / School: 109 - Facultad de Economía y Empresa

Degree: 525 - Master's in Economics

ECTS: 3.0

Year: 1

Semester: Second semester

Subject type: Optional

Module:

1. General information

1.1. Objectives

The subject and its expected outcomes respond to the following approaches and objectives:

Students should be familiar with the instruments for environmental assessment and evaluation of the impacts of human activity. The aim is also to familiarise the student with their resolution and representation, via computer.

1.2. Context and rationale of the subject in the Master

One of the clearest points of consensus at present is the need for environmental policies. In this context, the subject attempts to lay the theoretical and methodological foundations for such policies, focusing especially on the estimation of the environmental impact of the environment, quantitative assessment of socio-economic and environmental impacts and on the relationship between environment and growth, both at the national and international levels.

1.3. Recommendations for taking the subject

Although the course is self-contained, the student should have an adequate background in mathematics and economic theory.

It would also be very useful if you had a basic command of Excel and previous knowledge of a mathematical modelling programme such as MatLab.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), specifically, the activities planned in the course will contribute to the achievement of goals 4, 5, 7, 8 and 12.

2. Learning results

In order to pass this subject, the student must demonstrate the following results:

- To know the basics of environmental sustainability
- To know the basic techniques of environmental impact analysis and estimation, especially those associated with environmental impact assessment techniques, multi-sectoral and multi-regional and the more recent ones from industrial ecology.
- Be able to make quantitative valuations of environmental assets and impacts.
- Understand the interdependence issues between environment, economy and growth.
- Understand the role of globalisation and international trade on the environment.

Thus, by passing the course, the student will be more competent to:

Understand the interaction between economic growth and the environment, as well as the economic effects of the pollution and the exploitation of natural resources.

In particular, she/he will acquire the following competences:

- To be able to analyse the different dimensions of the environment from a multidisciplinary and systemic perspective, both at a theoretical and applied level.
- To be able to design responses to emerging challenges in a plural and complex society, through the evaluation of environmental policies at different decision-making levels.
- Identify the environmental challenges and problems to which the economy must respond.
- To quantify and understand economically the different elements involved in the relationship between economy and environment.

3. Syllabus

I. INTRODUCTION

1. SUSTAINABILITY AND GLOBAL ENVIRONMENTAL PROBLEMS.

2. AN EXAMPLE OF INTERDISCIPLINARY ANALYSIS. THE PROBLEM OF REVEGETATION

II. GROWTH and ENVIRONMENT: MULTISECTORAL MODELS, VALUATION AND ENVIRONMENTAL EXTENSION

3. MULTI-SECTORAL MODELS (I)

Input-output models, Social Accounting Matrices (SAM), Multi-regional models (MRIO)

4. MULTISECTORAL MODELS (II): Social and environmental extensions

5. ASSESSMENT OF THE INFLUENCE, DEPENDENCE AND EVOLUTION IN A FRAMEWORK

MULTI-SECTORAL: STRUCTURAL DECOMPOSITION ANALYSIS AND APPLICATIONS,

RAS AND HEM

III. ECOLOGICAL FOOTPRINTING and ENVIRONMENTAL RESPONSIBILITY

6. PRODUCTION, CONSUMPTION AND INCOME RESPONSIBILITY. Ecological footprint carbon footprint, water footprint, material footprint, social footprint.

7. ENVIRONMENTAL LIABILITY, INTERNATIONAL TRADE AND LOCAL IMPACTS

IV ENVIRONMENTALLY EXTENDED GENERAL EQUILIBRIUM MODELS (CEGs)

8. INTRODUCTION TO CGEs, SCENARIO DESIGN AND ANALYSIS

V. OTHER TECHNIQUES FOR ANALYSING AND ESTIMATING ENVIRONMENTAL IMPACTS.

9. BIO-ECONOMIC MODELS: Design of dynamic and static models. Applications to practical cases. .

10. ENVIRONMENTAL POLICY DESIGN: Applications to case studies.

4. Academic activities

Key activities of the course are the completion of the assignments proposed throughout the course. It is also a key date the comprehensive examination, which will be set at the end of the school term.

5. Assessment system

The student must demonstrate that he/she has achieved the intended learning outcomes by means of the following

evaluation activities:

- Continuous assessment: work completed, presentation of work, participation in classes and, where appropriate, overall objective test (100%).
- Overall assessment: Final exam (100%)

It is foreseen that these tests will be carried out in person, but if circumstances require it, they will be carried out semi-attendance or online. In the case of online assessment, it is important to note that, in any test, the student may be recorded, and may exercise their rights by the procedure indicated in:

https://protecciondatos.unizar.es/sites/protecciondatos.unizar.es/files/users/lopd/gdocencia_reducida.pdf

The necessary software will be used to check the originality of the activities carried out. The detection of plagiarism or copying in an activity will result in a mark of 0 points for that activity.