250678 - Environmental and Ecological Economics

Coordinating unit: 250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
Academic year: 2019
Degree: MASTER'S DEGREE IN ENVIRONMENTAL ENGINEERING (Syllabus 2014). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: Spanish

Teaching staff
Coordinator: OSCAR ALFRANCA BURRIEL
Others: OSCAR ALFRANCA BURRIEL

Opening hours
Timetable: The timetable set out the classes by e-mail with the professor.

Degree competences to which the subject contributes

Specific:
9521. The ability to integrate knowledge of integrated management of the natural environment and natural resources, particularly water and energy resources, in the development and proposal of scientific and technological solutions to challenges to sustainability.
13340. Apply scientific concepts to environmental problems and their correlation with technological concepts.

Transversal:
8560. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.
8561. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
8563. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

Teaching methodology

The subject consists of 3 hours per week of classroom activity (large size group).

The classes in the large size groups are devoted to theoretical issues, in which the basic concepts and topics of the subject are introduced, and some exercises and questions are performed.

Support material in the form of a detailed teaching plan is also provided using the virtual campus ATENEA: contents, conducted learning program and assessment activities, and also the relevant literature.

Learning objectives of the subject

CE01 - Apply scientific concepts to environmental problems and their correlation with technological concepts.
CE08-Dimension unconventional systems and advanced treatment and raise their mass balance and energy.

Explore scientific concepts and technical principles of quality management of the receiving means, atmosphere, water and soil, and applied to problem solving.

Explore scientific concepts and technical principles of management and treatment of gaseous emissions, water supply, sewage and waste and remediation techniques for groundwater and contaminated soils.

Sized systems for the treatment of major pollutants vectors in specific sectors of activity.

Interprets rules, identifies goals, assesses technical alternatives proposed unconventional solutions and priority actions.

Introduction to Environmental Economics. Natural Resources and Environment.

· Market failures and public policy: Externalities and public goods.
· Natural resources and production factors.
· Renewable resources and nonrenewable resources.
· Introduction to Ecological Economics

Economic Policy and Regulation.

· Property rights, administrative regulation, ethical aspects.

Environmental Economic evaluation methods.

· Cost-benefit analysis.
· Multi-criteria evaluation.

Company and Environment.

· Environmental costs for the company.
· Environmental accounting.
· New products and opportunities for the company.
· Environmental management systems for the company.

| Study load |
|-----------------|-----------------|-----------------|
| **Total learning time:** 125h | Theory classes: 19h 30m 15.60% |
| | Practical classes: 9h 45m 7.80% |
| | Laboratory classes: 9h 45m 7.80% |
| | Guided activities: 6h 4.80% |
| | Self study: 80h 64.00% |
## Content

### Environmental Economic Evaluation Methods

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 57h 35m</th>
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</thead>
<tbody>
<tr>
<td>Introduction to Environmental Economics.</td>
<td>Theory classes: 24h</td>
</tr>
<tr>
<td>Natural Resources and Environment</td>
<td>Self study : 33h 35m</td>
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</tbody>
</table>
- Natural resources and factors of production. |
- Renewable resources and nonrenewable resources. |
- Introduction to Ecological Economics. |
- Introduction to the concept of environmental assessments. |
- Methods of Environmental Evaluation. |
- Methods of Revealed Preference. |
- Methods of Stated Preference. |

**Specific objectives:**
Obtain basic knowledge of environmental valuation techniques, to be applied both in the public and private management of the environment.

### Economic Policy and Regulation

<table>
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<tr>
<th>Description:</th>
<th>Learning time: 21h 36m</th>
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</thead>
<tbody>
<tr>
<td>Environmental economic policy: Taxes and Subsidies, Property Rights, Administrative Regulation, Ethical Aspects.</td>
<td>Theory classes: 9h</td>
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**Specific objectives:**
The main objective is the introduction of the main instruments for the analysis of technical and economic environment.

### Company and Environment

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<tr>
<th>Description:</th>
<th>Learning time: 14h 23m</th>
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</thead>
<tbody>
<tr>
<td>Company and wastewater management</td>
<td>Theory classes: 6h</td>
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**Specific objectives:**
The main objective of these sessions is the description of the main private wastewater policies in firms.
## Qualification system

Final exam with materials (50%), Discussion of cases (25%), Revision of papers (25%)

## Regulations for carrying out activities

Failure to perform a laboratory or continuous assessment activity in the scheduled period will result in a mark of zero in that activity.

## Bibliography

**Basic:**

- Edwards-Jones, Davies i Hussain. Ecological Economics.
- Drechsel, Qadir i Wichelns. Wastewater.
- Turner, Bateman i Adger. Economics of coastal and water resources valuing environmental functions.
- A. Myrick Freeman. The measurement of environmental and resource values.
- Amacher, Ollikainen y Koskela. Economics of Forest Resources.