480074 - Social and Transdisciplinary Research

Coordinating unit: 250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
729 - MF - Department of Fluid Mechanics

Academic year: 2019
Degree: MASTER’S DEGREE IN SUSTAINABILITY SCIENCE AND TECHNOLOGY (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: Spanish

Teaching staff
Coordinator: ELISABETH ROCA BOSCH
Others: Miriam Villares Junyent
Jordi Segalàs Coral
Gemma Tejedor

Degree competences to which the subject contributes

Basic:
CB9. That students can communicate their conclusions and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously.
CB10. That students have the learning skills to allow them to continue studying in a way that will have to be largely autodirigido or autonomous.
CB8. Students should be able to integrate knowledge and handle complexity, and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their conocimientos and judgments.
CB7. That students can apply their knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
CB6. Knowledge and understanding to provide a basis or opportunity for originality in developing and app ideas, often within a research context.

Specific:
CE06. The capacity to apply the methods and tools used in the identification, information management, planning, management, execution and evaluation of programmes and projects in the fields of sustainability and environmental management to specific problems in a collaborative manner.
CE13. The ability to apply, critically analyse results and assess valorisation theories, approaches and methods in the fields of food and rural development and agricultural, water, energy, building construction, transport and spatial engineering.

General:
CG03. The ability to analyze, evaluate and synthesize, critically, new and complex ideas and promote, within academic and professional, scientific, social or cultural knowledge society contexts.
CG02. Develop and/or implement innovative ideas in a research context by identifying and formulating hypotheses and by submitting to prove objectivity, consistency and viability.

Transversal:
07 AAT N2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers.
Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
CT2. 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.
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CT3. 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.

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

Teaching methodology

Master class or conference (EXP): presentation of knowledge by the faculty through master classes or by external persons through invited conferences.
Case study (RP): collective resolution of exercises, conducting debates and group dynamics, with the teacher or other students in the classroom; presentation in the classroom of an activity carried out individually or in groups.
Theoretical - practical directed work (TD): realization of an activity or exercise of a theoretical and practical nature, in small groups, with the advice of the teacher in the classroom.
Project, activity or work (PR): learning based on group realization, of a work of certain complexity and extension, applying knowledge and presenting results.

Evaluation Activities (EV)

Learning objectives of the subject

To provide tools and methods of the social sciences for the design and implementation of transdisciplinary research and for the study of socio-environmental and technological challenges.

To understand the emergence of transdisciplinary research and the roles of participants in the science / society interface.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 19h 30m</th>
<th>15.60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>9h 45m</td>
<td>7.80%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>9h 45m</td>
<td>7.80%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>6h</td>
<td>4.80%</td>
</tr>
<tr>
<td>Self study:</td>
<td>80h</td>
<td>64.00%</td>
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</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Introduction to social and transdisciplinary research</th>
<th>Learning time: 9h 20m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Self study: 3h 20m</td>
</tr>
</tbody>
</table>

**Description:**
The need for social and transdisciplinary research to address the problems of unsustainability. The characteristics of conflicts and issues related to sustainability. Framework of post-normal complexity. Complexity, diversity of perspectives and knowledge, values in dispute, types of uncertainty.

**Related activities:**
Reading and comments on articles provided. Debate in the classroom.

**Specific objectives:**
To understand the context and the nature of unsustainability problems, as well as, approaching the appropriate methodological perspectives to study and manage them.

<table>
<thead>
<tr>
<th>The transdisciplinary research process</th>
<th>Learning time: 3h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
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</table>

**Description:**

**Related activities:**
Exercise of collaborative and co-creation work techniques.

**Specific objectives:**
To understand the characteristics of a transdisciplinary investigation and process of co-creation of knowledge.

<table>
<thead>
<tr>
<th>Co-creation and collaborative work</th>
<th>Learning time: 6h 20m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td></td>
<td>Self study: 3h 20m</td>
</tr>
</tbody>
</table>

**Description:**
Exploration of knowledge integration and mutual learning methods, boundary work, co-creation techniques and collaborative work.

**Related activities:**
Exercise of application of techniques of collaborative work and co-creation.

**Specific objectives:**
To get in contact with techniques for collaborative work.
### Methods of quantitative analysis: the survey

**Learning time:** 12h  
Theory classes: 5h  
Guided activities: 1h  
Self study: 6h

**Description:**  
The quantitative vs. qualitative debate. The need for triangulation to deal with complex problems of unsustainability. Design of questionnaires, sampling techniques and application.

**Related activities:**  
Survey design and application plan

**Specific objectives:**  
To get in contact with the phases of a social research process and the available methodologies.  
To understand the debate around qualitative and quantitative approaches in the social sciences, as well as their synergies and complementarities.  
To explain the survey and be able to propose an investigation, design a questionnaire and plan its application.

### Methods of qualitative analysis

**Learning time:** 21h  
Theory classes: 3h  
Practical classes: 2h  
Laboratory classes: 3h  
Guided activities: 1h  
Self study: 12h

**Description:**  
The in-depth interview and the group techniques, as strategies to analyse social perception, discourses and narratives on a sustainability topic. Participant and non-participant observation, historical analysis. Design of open and semi-structured questionnaires, selection of informants. Method planning and application. Life stories Deliberative techniques: Workshops and discussion groups. Content and discourse analysis. Treatment of qualitative information.

**Related activities:**  
Semi-structured interview with key stakeholders design and application.  
Qualitative discourse analysis exercise.

**Specific objectives:**  
Explain methodologies to collect qualitative information and apply techniques for its analysis.
Citizen participation in science and new methodologies based on ICT

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td>Visual information (photographs, videos), use and management of information from social networks and the media. Projects of Ciutadana science</td>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Related activities:</td>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td>Evaluation of a participatory experience or technological application within the framework of a social investigation</td>
<td>Self study: 4h</td>
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<tr>
<td>Specific objectives:</td>
<td></td>
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<tr>
<td>To get in contact with other methodologies of social sciences based on new technologies, social networks and the participation of society. Understand its applicability and limits in a transdisciplinary context.</td>
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</table>

Transdisciplinary evaluation of strategies, plans and projects

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<tr>
<th>Description:</th>
<th>Learning time: 18h</th>
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</thead>
<tbody>
<tr>
<td>Related activities:</td>
<td>Practical classes: 4h</td>
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<tr>
<td>Visions of the future</td>
<td>Guided activities: 4h</td>
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<tr>
<td>Exercise of robustness scenario analysis.</td>
<td>Self study: 6h</td>
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<tr>
<td>Essay on guest conference</td>
<td></td>
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<tr>
<td>Specific objectives:</td>
<td></td>
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<tr>
<td>To explain integrative vocation methodologies that can combine previously explained techniques to evaluate plans, projects or future scenarios in order to manage problems of unsustainability from transdisciplinarity. Apply scenario analysis</td>
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Qualification system

The course has a practical orientation. The evaluation will be made from the work and practices carried out throughout the course (TR) that will have a value of 80% of the final grade.

Attendance and participation in the classroom is considered essential and corresponds to 20% of the remaining grade.
Bibliography

Basic:


Complementary:

