250663 - GESPROAMB - Management of Environmental Projects

Coordinating unit: 250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit: 758 - EPC - Department of Project and Construction Engineering
Academic year: 2019
Degree: MASTER'S DEGREE IN ENVIRONMENTAL ENGINEERING (Syllabus 2014). (Teaching unit Compulsory)
ECTS credits: 5
Teaching languages: Spanish

Teaching staff
Coordinator: SANTIAGO GASSO DOMINGO
Others: SANTIAGO GASSO DOMINGO

Opening hours
Timetable: Hours of attention to students is conducted both during the intervals between classes and by means of hours agreed in person or by electronic mail.

Degree competences to which the subject contributes

Specific:
13340. Apply scientific concepts to environmental problems and their correlation with technological concepts.
13343. Identify, define and propose technological management and appropriate solution to an environmental problem.
13345. Ask practically, with an economic perspective and according to the applicable environmental legislation, environmental management tools and environmental risk assessment.
13346. Plan and schedule projects according to parameters cross-project evaluation, develop and organize their basic documentation and analyze technical and economic viability.

Transversal:
8558. ENTREPRENEURSHIP AND INNOVATION: Being aware of and understanding how companies are organised and the principles that govern their activity, and being able to understand employment regulations and the relationships between planning, industrial and commercial strategies, quality and profit.
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.
8562. 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.
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.
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Teaching methodology

The course consist of 3 hours per week of classroom.

Part of thes hours will be devoted to the presentation by the teacher of the essential concepts and elements of the subject. It is also envisaged that some of these concepts will be acquired by conducting, analyzing and discussion of case studies.

Another part these hours will be devoted to work in small groups (collaborative groups) on the project management of an environmental project. Throughout the course, the students will have to present different deliverables associated with the result obtained in the project management process of the proposed project.

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

Learning objectives of the subject

CE01 - Apply scientific concepts to environmental problems and their correlation with technological concepts.
CE04 - Identify, define and propose technological management and appropriate solution to an environmental problem.
CE06 - Ask practically, with an economic perspective and according to the applicable environmental legislation, environmental management tools and environmental risk assessment.
CE07 - Plan and schedule projects according to parameters cross-project evaluation, develop and organize their basic documentation and analyze technical and economic viability.

Understand the context in which they have developed environmental policies.
Meet environmental legislative framework and the main regulations that develop it.
Analyzes the economic factors associated with environmental management.
Understands the concepts and actions resulting from the prevention and control of pollution.
Know the main elements associated with environmental management.
Apply environmental management tools.
Tools known environmental risk analysis for human health and ecosystems.
Meet the analysis tools lifecycle and sustainability, and its practical application.
Solidify the main knowledge that characterize and define the project methodologies and their application to the field of Environmental Engineering.
Acquire knowledge and skills to manage environmental projects, evaluating alternatives and making decisions about their viability.
Definition applies methods and project management in the development of an environmental project (case study).
Learn in a practical way the dynamics of multidisciplinary teamwork.

Introduction to the methodology of projects.
Project planning.
Economic evaluation of the project.
Close the project and delivery of documentation.
Practical application through the development of a practical project team to resolve an environmental actual or fictitious problem.
## Study load

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time (h)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total learning time</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Theory classes:</td>
<td>15</td>
<td>12.00%</td>
</tr>
<tr>
<td>Practical classes:</td>
<td>10</td>
<td>8.00%</td>
</tr>
<tr>
<td>Laboratory classes:</td>
<td>10</td>
<td>8.00%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>10</td>
<td>8.00%</td>
</tr>
<tr>
<td>Self study:</td>
<td>80</td>
<td>64.00%</td>
</tr>
</tbody>
</table>
## Content

### Project management and its processes

<table>
<thead>
<tr>
<th>Learning time: 4h 48m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td>Self study : 2h 48m</td>
</tr>
</tbody>
</table>

**Description:**
- Project management: Concept. Fundamentals of project management.
- Project management process groups: Initiating process group. Planning process group. Executing process group. Monitoring and controlling process group. Closing process group. Interaction between the process groups.
- Project integration management

**Specific objectives:**
- Know and understand the basics of project management and its application to the field of environmental engineering
- Identify key processes on which project management is based

### Project scope management

<table>
<thead>
<tr>
<th>Learning time: 12h</th>
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</thead>
<tbody>
<tr>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td>Practical classes: 1h</td>
</tr>
<tr>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Self study : 7h</td>
</tr>
</tbody>
</table>

**Description:**
- Planning scope management: Project charter.
- Scope definition: Concepts. Acceptation criteria. Deliverables
- Work Breakdown Structure (WBS/EDT)
- Scope Validation

Realization of application exercises on the definition of project scope and WBS

The laboratory sessions will consist of carrying on, in a cooperative group, the management of an environmental engineering project proposed by the tutor. In this first session students should define and plan the scope of the proposed project.

**Specific objectives:**
- Know how to focus the project scope planning in the field of environmental engineering
- Be familiar with the concepts of Work Breakdown Structure (WBS) and know the techniques for its application
- Know the steps and elements required for defining project scope in the field of environmental engineering
### Project time and human resources management

**Learning time:** 19h 12m
- Theory classes: 4h
- Practical classes: 2h
- Laboratory classes: 2h
- Self study: 11h 12m

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
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</thead>
<tbody>
<tr>
<td>- Plan and manage project scheduling</td>
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<tr>
<td>- Define and sequence activities</td>
</tr>
<tr>
<td>- Estimate activity resource and their management: Identifying the roles and skills required in the project, definition of responsibilities, and personal administration.</td>
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<tr>
<td>- Estimate activities duration</td>
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<tr>
<td>- Develop and control the schedule</td>
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<tr>
<td>Realization of application exercises on the estimate activities duration and human resource assignments. Laboratory sessions consist in applying the concepts explained in theory to make the scheduling and human resources assignment to the project managed by the group.</td>
</tr>
</tbody>
</table>

**Specific objectives:**
- Be familiar with project scheduling techniques
- Know the steps for estimating human resources and management problems associated with
- Be able to perform an adequate control of the timing of the project
## Project cost and procurement management

<table>
<thead>
<tr>
<th>Learning time: 19h 12m</th>
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<tbody>
<tr>
<td>Theory classes: 4h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Self study: 11h 12m</td>
</tr>
</tbody>
</table>

### Description:
- Estimate costs
- Determine budget.
- Control Costs.
- Plan procurements management: Types of contractual agreements. Make or buy analysis. Procurement documents. Source selection criteria

- Conduct and control of procurements

Realization of application exercises on project cost estimate and plan procurements management. The laboratory will consist of estimating the investment and operating costs of the project managed by the group, as well as an analysis of its economic viability. Besides, cost indicators will be implemented in order to monitor and control the state of development of the project. It will also be addressed the plan procurements management required in the project.

### Specific objectives:
- Understand the concepts associated with the project costs estimation
- Apply techniques for estimating and control of costs
- Know how to define and describe the steps required for procurement planning in the project
Project risks and quality management

Learning time: 16h 48m
Theory classes: 3h
Practical classes: 2h
Laboratory classes: 2h
Self study: 9h 48m

Description:
- Quality assurance
- Quality control
- Identify risks
- Perform qualitative and quantitative risks analysis
- Plan risk responses
- Control risks

Realization of application exercises on identification and control of project risks, and quality assurance. The laboratory session will be to complete an identification and assessment of risks associated with the execution of the project managed by the group, as well as the development of a preliminary quality management plan.

Specific objectives:
- Understand the main aspects related to the identification and characterization of the risks associated with the implementation of projects in the field of environmental engineering
- Identify the characteristics of the elements of quality assurance and control of projects
The mark of the course is obtained from the ratings of continuous assessment and their corresponding case studies and/or group assignments.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.

The final mark of the subject will be calculated, with the indicated weighting, from the following marks:
- Final evaluation of theory 35%
- Exercises of theory sessions and case studies 15%
- Project management work. Documents and reports 10%
- Project management work. Individual performance 35%
- Project management work. Oral presentation 5%
Regulations for carrying out activities

Student's participation in group follow-up sessions will be one of the criteria used for evaluating students; to that effect, these sessions are considered an evaluation event. Therefore, any unjustified non-attendance to these sessions will result of zero in that activity. The oral presentation session is also considered as an evaluation event and, thus, a subject final grade will be given in case of no-attendance to this session.

The marks of the exercises and cases studies performed in the theory is obtained based on the activities or work done in these sessions, related to the theoretical concepts that are introduced in them, and will not be possible to request replacing them by alternative activities.

A minimum of 75% classes attendance is considered necessary to be evaluated

To pass the subject, the students must deliver and expose orally all work requested during the course.

Bibliography

Basic:


Complementary:
