

Course guide

220213 - 220213 - Project Management

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Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 758 - EPC - Department of Project and Construction Engineering.

Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Marcel Macarulla Martí

Others: Santiago Gassó Domingo - Francesc Pardo Bosch - Jordi Cusidó Roura - Miguel Ángel Saiz Segarra - Jordina Arcal Cunillera - Irene Font Pujolà - Hèctor Rallo Tolós - Aleix Guinart Delgado

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Knowledge and skills for integrated project management.
2. Ability to manage research, development and technological innovation.

TEACHING METHODOLOGY

The course methodology consists of:

- Theoretical content sessions
- Lab sessions or problem-solving sessions
- Working in collaborative groups
- Autonomous work to carry out the practical case
- Autonomous study work

LEARNING OBJECTIVES OF THE SUBJECT

Acquire the necessary knowledge to carry out a correct direction and integrated management of the project, aimed at achieving the basic goals of industrial engineering projects: costs, deadlines and quality. Specifically, it is intended that the student acquire the following skills:

- Organization and leadership to manage a team in charge of an engineering project.
- Appropriate management of stakeholder participation in the project.
- Assessment and application of the processes to be carried out in the Management of a Project, evaluating the resources that have to be dedicated to each of them.
- Approach to an R&D project, defining the fundamental processes for its proper management.

STUDY LOAD

Type	Hours	Percentage
Self study	80,0	64.00
Hours small group	30,0	24.00
Hours large group	15,0	12.00

Total learning time: 125 h

CONTENTS

Module 1: Project management and its processes

Description:

- 1.1 Project Management: Concept. Basics of project management. Role of project manager.
- 1.2 Organization and life cycle of the project: Organizational structure. Stakeholders. The project team. Project life cycle.
- 1.3 Project management process groups: initiating, planning, execution, monitoring and controlling, closing. Interaction between processes groups.
- 1.4 Project integration management.

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 12h

Theory classes: 2h

Laboratory classes: 4h

Self study : 6h

Module 2: Project scope management

Description:

- 2.1 Planning scope management: project minutes, technical tools.
- 2.2 Definition of scope: concepts, acceptance criteria, deliverables.
- 2.3 Work breakdown structure (WBS): WBS, dictionary
- 2.4 Scope validation.

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 17h

Theory classes: 2h

Laboratory classes: 4h

Self study : 11h

Module 3: Project time and human resources management

Description:

- 3.1 Planning and managing the project schedule
- 3.2 Definition and sequencing of activities
- 3.3 Estimation of resources and their management
 - Identification of the roles and skills required in the project
 - Definition of responsibilities.
 - Personnel administration.
- 3.4 Estimation of the duration.
- 3.5 Development and schedule control

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 18h

Theory classes: 2h

Laboratory classes: 4h

Self study : 12h

Module 4: Project cost and procurement management

Description:

- 4.1 Cost estimation.
- 4.2 Budget estimation.
- 4.3 Cost control.
- 4.4 Project acquisition plan: types of contracts, "make or buy" analysis, acquisition documents, criteria for the selection of suppliers.
- 4.5 Execution and control of acquisitions.

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 23h

Theory classes: 3h

Laboratory classes: 5h

Self study : 15h

Module 5: Project quality and risk management

Description:

- 5.1 Project quality assurance.
- 5.2 Project quality control.
- 5.3 Project risks identification.
- 5.4 Project qualitative and qualitative risk analysis.
- 5.5 Project risk response plan.
- 5.6 Project risk control.

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 23h

Theory classes: 3h

Laboratory classes: 5h

Self study : 15h

Module 6: Project communication and stakeholders management

Description:

- 6.1 Project communication plan: internal and external.
- 6.2 Project communication management.
- 6.3 Project communications control.
- 6.4 Project stakeholders identification.
- 6.5 Managing stakeholder participation.
- 6.6 Control of stakeholder participation.

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 17h

Theory classes: 2h

Laboratory classes: 4h

Self study : 11h

Module 7: Project management models in research, development and innovation

Description:

- 7.1 Normalization in R+D+i project management
- 7.2 Project management in changing environments
- 7.3 R+D+i financing.
- 7.4 Technological surveillance

Related activities:

- Activity 1: Theory sessions
- Activity 2: Theory sessions exercises
- Activity 3: Practical case of project management

Full-or-part-time: 15h

Theory classes: 1h

Laboratory classes: 4h

Self study : 10h

ACTIVITIES

Activity 1: Theory classes

Description:

Preparation before and after the theory sessions and attendance at them.

Specific objectives:

Transfer the necessary knowledge for a correct interpretation of the contents developed in the large group sessions, resolution of doubts related to the subject's syllabus and development of generic competences.

Material:

Course slides on the Atenea platform.

General bibliography of the subject.

Delivery:

None.

Full-or-part-time: 12h

Theory classes: 6h

Self study: 6h

Activity 2: Theory sessions exercises

Description:

Exercises and activities related to the concepts developed in the theoretical sessions

Specific objectives:

Acquire the necessary skills for a correct interpretation of the concepts of the subject, as well as a satisfactory application of the tools and instruments developed in the theory sessions.

Material:

Course notes and slides on the Atenea platform.

General bibliography of the subject.

Delivery:

During these sessions, professors and students will carry out practical exercises in class, individually or in small groups.

Represents 15% of the final grade for the course.

Full-or-part-time: 13h

Theory classes: 7h

Self study: 6h

Activity 3: Practical case of project management

Description:

Develop the project management of a proposed project by a tutor assigned to each group, applying the concepts and methodologies developed in the theory sessions.

Specific objectives:

Acquire the necessary skills for a correct interpretation of the concepts of the subject, as well as a satisfactory application of the tools and instruments developed in the theory sessions.

Material:

Course notes and slides on the Atenea platform.
Collaborative work environment BSCW.
Work guidelines published in Atenea and BSCW.
Support material for the preparation of documents and presentations.
General bibliography of the subject.

Delivery:

- Project Charter and stakeholders identification. The delivery date will be approximately 3 weeks after classes started.
- Report regarding the project time and resources management. To be delivered the 5th week.
- Report regarding the project costs and acquisitions management. To be delivered the 8th week.
- Report regarding the project quality and risk management. To be delivered the 10th week.
- Report regarding the project communications management. To be delivered the 12th week.
- Minutes of the group meeting. They will be handed out after each group meeting.
- Final report. The delivery will be handed during the last week of theory sessions.

The delivery of these documents will be made in digital format through the BSCW.

It will represent 45% of the final grade for the course, and corresponds to two parts of the evaluation of the practical case developed:

- Evaluation of the practical case. Documents and reports delivered representing 10%.
- Evaluation of the practical case. Individual work to achieve the objectives of the work that represents 35%

Full-or-part-time: 84h

Laboratory classes: 28h

Self study: 56h

Activity 4: Final theory exam

Description:

Individual and written test on the contents of modules 1, 2, 3, 4, 5, 6 and 7.

Specific objectives:

Corroborate the basic knowledge, concepts, principles and fundamentals acquired by students.

Material:

Final exam sheet.

Delivery:

Test solved by students.
Represents 35% of the final grade for the course.

Full-or-part-time: 10h

Theory classes: 2h

Self study: 8h

Activity 5: Oral practical case presentation

Description:

Oral presentation of the developed project.

Specific objectives:

Check the student's ability to present their results in public. Synthesis capacity. Development of generic competences.

Material:

Audiovisual media for the presentation.

Delivery:

Final presentation in digital format (CD, DVD, other) + BSCW.

It represents 5% of the final grade for the course.

Full-or-part-time: 6h

Theory classes: 2h

Self study: 4h

GRADING SYSTEM

The final grade of the course will be obtained, with the weighting indicated, from the following activities:

- Final Theory Exam 35%
- Theory Sessions Exercises 15%
- Evaluation of the realization of the practical case: Documents and reports 10%
- Evaluation of the realization of the practical case: Individual work 35%
- Evaluation of the Oral Presentation of the practical case 5%

One of the parameters that will be used to evaluate students in the laboratories is their participation during the weekly follow-up sessions, and in this sense the laboratories are considered evaluation acts. Therefore, the unexcused absence to any laboratory session will motivate the student to receive the final grade of NOT PRESENTED. The final session of oral presentation of the work is also considered as an act of evaluation, and therefore in this case not attending it will also imply a grade of NOT PRESENTED in the final grade for the course.

The grade of the exercises of the theory sessions is obtained based on the activities or works developed in these sessions, related to the theoretical concepts that are introduced in them, and its replacement by alternative activities cannot be requested.

In the evaluation of the project documents, both content and formal aspects will be considered. The course foresees continuous evaluation procedures that will allow recovering the unsatisfactory results that can be obtained during the course.

EXAMINATION RULES.

Activity 3: Practical case of project management

To carry out the laboratory work, the students will be organized into groups. The form of operation of the groups will be that of a cooperative group. The members of each group will have to choose a student who represents the group and who acts as its coordinator.

To follow up on the work carried out, in each practical session, each group will have to make an agenda with the topics to be discussed in the next session and a meeting minutes with the presentation of the topics discussed in the meeting and the agreements adopted.

The presence of the students in the practical classes will be considered an act of evaluation, therefore attendance at the laboratory classes is compulsory for all the members of the group. Attendance to laboratory classes is an essential requirement to be able to pass the course. At the beginning of the laboratory sessions, the tutor will pass a list in which the signature of the assistants will be collected.

The development of the works will be done through the use of the collaborative virtual environment BSCW. This environment provides a folder structure in which all the information generated and used by the group will be located. Only documentation posted to the BSCW will be considered for evaluation purposes.

The contents and formats of the documents to be delivered during the development of the project will be defined in the first week of the course. All these documents will also have to be available in the corresponding folder in the BSCW workbench. Any work that is delivered outside the established deadlines will not be accepted. Groups that do not submit their work or do so after the deadline will receive a grade of NOT PRESENTED.

Activity 4: Final theory exam

The written evaluation can consist of or include multiple-choice questions with four possible answers, the student having to choose the correct solution. In this case, for each incorrect answer 0.5 points will be subtracted, the questions left blank will not subtract points. In addition, the test may be completed with the resolution of some exercises.

Failure to carry out this evaluation act implies a grade of NOT PRESENTED in the final grade for the course

Activity 5: Oral practical case presentation

In the last week of the course, each group will have to make an oral presentation of their work, lasting 20 to 25 minutes. Computer media (such as PowerPoint, etc.) may be used to carry out the presentations.

The oral presentation will be evaluated by professors of the Department, who will formulate questions that they consider appropriate and will evaluate aspects of the presentation such as: structure, clarity, dynamics, response to questions and means used, etc.

BIBLIOGRAPHY

Basic:

- A guide to the project management body of knowledge (PMBOK® Guide) [on line]. 6th ed. Newtown Square, Pa.: Project Management Institute, Inc, cop. 2017 [Consultation: 03/05/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5180849>. ISBN 9781628253924.
- Capuz Rizo, Salvador [et al.]. Bases para la competencia individual en dirección de proyectos, programas y carteras de proyectos: versión 4.0. Valencia: AEIPRO, 2018. ISBN 9788409082711.

Complementary:

- Streich, Richard; Brennholt, Jens. "Communication in projects". Watian, Monika [et al.]. Applied psychology for project managers: a practitioner's guide to successful project management [on line]. Berlin, Heidelberg: Springer, 2015. P. 53-72 [Consultation: 15/02/2023]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=1998075>.
- Wingate, Lory Mitchell. Project management for research and development: guiding innovation for positive R&D outcomes [on line]. Boca Raton: CRC Press, 2015 [Consultation: 15/02/2023]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=1647697>. ISBN 9781466596290.



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- PM² project management methodology: guide 3.0 [on line]. Brussels: Publications Office of the European Union, 2018 [Consultation: 25/01/2023]. Available on: <https://data.europa.eu/doi/10.2799/755246>. ISBN 9789279918292.