

Models and Tools for Project and Financial Management (250441)

General Information

School	ETSECCPB
Departments	Departament d'Enginyeria Civil i Ambiental (DECA)
Credits	5.0 ECTS
Programs	MÀSTER UNIVERSITARI EN ENGINYERIA DE CAMINS, CANALS I PORTS (pla 2012) MÀSTER UNIVERSITARI EN ENGINYERIA DE CAMINS, CANALS I PORTS (pla 2012) PARS: ENGINYER/A DE CAMINS, CANALS I PORTS (pla 2022)
Course	2025/26

Main teaching language at each group

- Group 11Q1 Spanish (Q1)
- Group 12Q1 Spanish (Q1)

Faculty

Responsible Faculty: Miguel Angel Bretones Gallardo
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Objectives of Education

Specialization subject in which knowledge on specific competences is intensified.

Knowledge and skills at specialization level that permit the development and application of techniques and methodologies at advanced level.

Contents of specialization at master level related to research or innovation in the field of engineering.

1. To introduce students to the knowledge and practical application of the methodology and the basic principles of project management, with a focus mainly based on human resources techniques.

2 Briefly introduction of concepts, tools and / or techniques related to project management such as communication, leadership, human resources, management and conduct effective meetings, selection of efficient working teams, networking and others

3. Enhance the development of oral skills, presentation and defense of ideas, participation and group discussion. Introduction to learning trough Case Method.

Competencies

Transversal

ENTREPRENEURSHIP AND INNOVATION: Being aware of and understanding the mechanisms on which scientific research is based, as well as the mechanisms and instruments for transferring results among socio-economic agents involved in research, development and innovation processes.

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.

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.

Total hours of student work

		Hours	Percentage
Supervised Learning	Large group	25.5 h	56.67 %
	Medium group	9.75 h	21.67 %
	Laboratory classes	9.75 h	21.67 %
	Guided Activities	0.0 h	0.00 %
Self Study		80.0 h	

Contents

Preliminaries

General Introduction to approach the subject. Content. Organisational issues. Reflections and comments prior to consider along the way. What is and what is not?

Specific Objectives

Establish course objectives. Briefly detail the contents and structure of the course and determine the methodology.

Introduction to Project Management

Definition of project management. Pros and cons. Preliminaries.

Definition of project. Key issues and historical review. Projectization. The life cycle of a project. Initial description of the role of Project Manager in charge of managing a project. Challenges. Introduction to the concepts of motivation and leadership. Key aspects. And learning techniques to improve group communication. Public speaking. Assertiveness. Nonverbal communication and other. Concept of leader and leadership. Difference between boss and leader. Leader attributes and advantages. Resistance and change management. Success. Troubleshooting. Mediation techniques.

Specific Objectives

Learn the basic terminology and key concepts to be used throughout the course. Learn to identify a project according to their characteristics. Learning to understand many of the professional activities to be developed in the future. the perspective of project management. Present key aspects to consider, not so much from the methodological point of view, as related to the environment in managing and / or directing a project. Presentation of content related to the interaction and group work as previous tool (and essential) for leadership. Understand the fundamental concepts related to leadership and its place in the perspective of the project manager as conductor of teams.

The life cycle of a project

Introduction to techniques for project selection (when possible!). Concept and its place in the life cycle of a project. Project selection models. Definition and concept fits within the life cycle of a project. Goals and metrics. Identification success criteria and requirements, the method QFD. Presentation of "Alvaro Case" and "Indian Case". Strategies for problem solving in the context of project management and obtaining solutions consistent with

the objectives. Multi-criteria analysis and brief introduction to the basic theoretical concepts of operations research.
Planning in the context of the life cycle of a project. Key issues to consider planning and standard errors. Estimation. Scope Management. Time Management.
Brief historical introduction to graphical methods of planning. Graphs. Gantt Chart. PERT methods and Roy.
Brief introduction to the use of MS Project. Example
The management of information the field of planning, development and monitoring of a project. How to get enough information with the right quality?
Description and methodology to determine it in the context of creating schedules. Uncertainty and determination of the duration of an activity.
Key Steps in cost management of a project. Budgeting and cost control
Simulation and optimization. Crash duration. Examples
The risk in the context of project management. Threats and opportunities. Risk quantification.
Concept of crisis in the context of project management. Perception and reality. Learning through Concorde cases, Tylenol and Perrier.
Concept and justification. Steps of the renewal of a project.
The control in the context of the life cycle of a project. Monitoring. Internal and external stakeholders. Basic rules.
Challenges in completing a project. The punch lists. Lessons learned and transmitted. Post-mortem meetings.

Specific Objectives

Learn the basic techniques and models to be applied in this phase of the life cycle of a project.
Learn the basic techniques to apply at this stage of the life cycle of a project. Introduction and basic knowledge of new concepts such as stakeholder. Beginnings with the Case Method.
Learning the basic concepts associated with this phase of the life cycle of a project. Resolution of case studies.
Learning the basic concepts and tools for scheduling and times. Reasoned construction schedules.
Introducing the usual tools for planning and monitoring of projects. Resolution of case studies.
Acquisition of key concepts associated with the subject.
Acquisition of basic knowledge related to the subject. Presentation of a practical example.
Acquisition of basic knowledge related to the subject in the context of project management
Basic learning with the simulation and optimization techniques, such as cost or duration, in the context of project management.
Acquisition of the basic concepts and techniques in the field, in the context of project management.
Learning key concepts of crisis management and in-depth analysis and discussion of cases.
Presentation of the fundamental concepts associated with the subject in the context of project management.
Acquisition of knowledge and fundamental techniques in the art in the context of project management.
Knowing the basic methodology applied in this phase of the life cycle of a project.

Miscellany

Speaker to be confirmed
Speaker to be confirmed

Specific Objectives

To influence the human factor when participating in and / or manage multidisciplinary teams working.
Introduce the concept of emotional intelligence.
Content to be confirmed

Human resources

Properties of the project teams. Formation and evolution. Common trends on successful team. (Self) discipline. Virtual teams.
Stages of preparation and development of a meeting. Steps for effective management. Types of meetings and participants. Planning.
Concept and role of the facilitator. Rules of behavior. How to manage a meeting? Participation, focus and others.
Common tools to enhance creative thinking
Concept and different definitions. Networks. Organizational Networking. Social Networking. Networking online.

Specific Objectives

Acquisition of the fundamental concepts of collaborative work. Practical application.

To introduce different techniques for managing and facilitating meetings and its application to everyday situations.

Acquisition of the basic principles and concepts for facilitating meetings for use either as a facilitator or as an assistant to them.

Presentation of a toolbox to promote the application of creativity techniques not only project management but idea generation and problem solving.

Presentation of the principles and basic concepts of networking, with special emphasis on the social networking

Tools for financial management

To be confirmed

Closure

Final thoughts. Plan For Barcelona. Course summary.

Specific Objectives

Summary of the course. Feedback and postmortem analysis of the project. Discussion of the strengths and improvement areas. Tips and recommendations. Final conclusions.

Activities

Assignment

During the course several activities will be evaluated to assess: the activity of students during classes, the application of the techniques analyzed during the course to real cases, and the oral presentations of assignments.

Dedication

6h

Teaching Methodology

The course is taught throughout the first four months, from September to January over a period of 13 weeks.

In one 3-hour session per week (including break (s)) will develop the content of the course, the theoretical exposition interspersed with exercises (some of them to solve in class), group dynamics, participatory and reflections cases. Part of the practical work, which will be evaluated, will be held in small groups.

The educational material is available on the virtual campus, where they found the course content and reference material and extension of some of the topics covered.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

Grading Rules

() The evaluation calendar and grading rules will be approved before the start of the course.*

The rating of the course is derived from the ratings of the exercises and / or cases to be proposed along the course and, above all, for the continuous assessment of the student, through their participation in the course and classroom interaction with the group in the practical classes.

A variable number (3 to 5) of exercises/cases/problems to be solved out of classes will be proposed within the course. This work will represent aprox 50% of the total rating. Aprox 25% will be assigned to the participation/interaction in class while the other 25% aprox will correspond to the proposed exercises (up to 3 on the whole course) to be solved (individual or in group) in class.

No final examination will be done

Test Rules

If there is one of the ongoing evaluation activities will be considered as zero score.

Office Hours

To be determined depending on the course, but generally on Fridays from 11 am and at any other time in hours and instead arranged by request.

Bibliography

Basic

- Kerzner, H. [Using the project management maturity model: strategic planning for project management](#). 3rd ed. Hoboken, New Jersey: John Willey & Sons, 2019. ISBN 9781119530879.
- Verzuh, E. [The fast forward MBA in project management](#). 5th ed. Hoboken: John Willey & Sons, 2016. ISBN 9781119086581.
- Heerkens, G. [Project management](#). 2nd ed. New York: McGraw-Hill, 2013. ISBN 9780071818483.

Complementary

- Heldman, K. [PMP: project management professional exam: study guide](#). 9th ed. Indianapolis, Indiana: John Wiley & sons, 2018. ISBN 9781119420903.
- Tinnirello, P.C. (ed.). [New directions in project management](#). Boca Raton: Auerbach, 2002. ISBN 9780203972724.
- Hall, E.; Johnson, J. [Integrated project management](#). Upper Saddle River, NJ ; Columbus, Ohio: Prentice Hall, 2003. ISBN 0130674494.
- Project Management Institute. [Guía de los fundamentos para la dirección de proyectos: \(guía del PMBOK\)](#). 6th ed. Newtown Square: Project Management Institute, 2017. ISBN 9781628254518.
- Serer Figueroa, M. [Gestión integrada de proyectos](#). 3a ed. Barcelona: Edicions UPC, 2010. ISBN 9788476539309.