



Universidad  
de Alcalá

# TEACHING GUIDE

## Project Management

**Master in  
Telecommunication Engineering**

**Universidad de Alcalá**

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**Academic Year 2022/2023**

2<sup>nd</sup> Year - 1<sup>st</sup> Semester

# TEACHING GUIDE

Course Name:	<b>Project Management</b>
Code:	<b>201820</b>
Master in:	<b>Master in Telecommunication Engineering</b>
Department and area:	<b>Todos los implicados en la titulación Tecnología electrónica, Ingeniería Telemática, Teoría de la Señal y Comunicaciones</b>
Type:	<b>Compulsory</b>
ECTS Credits:	<b>6.0</b>
Year and semester:	<b>2<sup>nd</sup> Year, 1<sup>st</sup> Semester</b>
Teachers:	Javier Macías Guarasa (coordinador) José Antonio Portilla Figueras Juan Ramón Velasco Pérez
Tutoring schedule:	Consultar al comienzo de la asignatura
Language:	Spanish / English Friendly

## 1. COURSE SUMMARY

The Master's Degree in Telecommunications Engineering enables the student to the regulated profession of Telecommunications Engineer, according to the order CIN / 355/2009, therefore the main objective of the subject is to provide students with the necessary skills to successfully address the planning, coordination, and technical and economic management of projects in information and communications environments (ICT), as well as preparing them for the current circumstances of the professional environment and the professional market.

For this, the course will introduce the philosophy of project management, its fundamental concepts and the main management areas, so that students know how to distinguish the different tasks that are necessary and recommended in each phase of a project, as well as its application to projects specifically focused on ICT environments. In addition, real and practical cases of current projects in fields such as networks and infrastructure, home automation or the environment will be studied and carried out.

The course will also study the main regulations in our country regarding telecommunications and the information society and their implications for the professional practice. In addition, international regulations with influence in our country will be introduced.

Finally, understanding that the Telecommunications Engineer has a multidisciplinary component, the student will be trained in cross-cutting issues such as professional deontology or R+D+i.

## 2. SKILLS

### Basic, Generic and Cross Curricular Skills.

This course contributes to acquire the following generic skills, which are defined in the Section 3 of the Annex to the Orden CIN/355/2009:

**en\_CGT1** - Skill of analysis and synthesis.

**en\_CGT2** - Skill of organization and planning.

**en\_CGT3** - Skill to analyze and search for information from diverse sources

**en\_CGT4** - Skill to make decisions.

**en\_CGT5** - Skill to adapt to new situations.

**en\_CGT6** - Commitment to Human Rights, democratic principles, equality between women and men, solidarity, environmental protection and with the promotion of a culture of peace

**en\_CB6** - To have and understand knowledges that provide a basis or opportunity to be original in the development and/or application of ideas, often in a research context

**en\_CB7** - That students know how to apply the acquired knowledge and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.

**en\_CB8** - That students be able to integrate knowledge and face the complexity of making judgements based on incomplete or limited information that includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements.

**en\_CB9** - That students be able to communicate their findings and the ultimate knowledge and reasons behind them to specialized and non-specialized audiences in a clear and unambiguous manner.

**en\_CB10** - That students have the learning skills that will enable them to continue studying in a way that will be largely self-directed or autonomous.

**en\_CT1** - Troubleshooting skill

**en\_CT2** - Ethical commitment to work

**en\_CT3** - Skill to work in a team

**en\_CT4** - Working in a pressure environment

**en\_CT5** - Motivation for quality

### Professional Skills

This course contributes to acquire the following professional skills, which are defined in the Section 5 of the Annex to the Orden CIN/355/2009:

**en\_CGestion2** - Capacity for the elaboration, direction, coordination, and technical and economic management of projects on: systems, networks, infrastructures and telecommunication services, including the supervision and coordination of the partial projects of their work; common telecommunication infrastructures in buildings or residential cores, including digital home projects; telecommunication infrastructures in transport and the environment; with its corresponding facilities for the supply of energy and evaluation of electromagnetic emissions and electromagnetic compatibility

### Learning Outcomes

**RA1.** The student must have sufficient knowledge to plan and manage projects in a structured and efficient way, applying general management techniques and specifically in the ICT sector

**RA2.** The student must be able to make project proposals through practical cases, including various aspects, such as human resources, budgeting, time frame, quality, etc.

**RA3.** The student must know and know how to apply the current legislation in the field of telecommunication and the information society.

**RA4.** The student understands the role of different public and private institutions in professional development

**RA5.** The student has acquired cross-disciplinary and multidisciplinary skills valid for the professional practice of telecommunication engineering

## 3. CONTENTS

Contents Blocks	Total number of hours
<b>Block 1: Telecommunication Project Management:</b> Project management: Planning, execution and control.	20 hours
<b>Block 2: Legislation, ruling and normalization applied to ICT:</b> General Telecommunications Law, Information Society Laws, Radioelectric Spectrum; markets and competency	8 hours
<b>Bloque 3: Practical cases:</b> Network and common telecommunication infrastructures; Domotic and Smart Environments; Environment and transport; Electronic Systems.	18 hours
<b>Bloque 4: Telecommunication Engineering Skills:</b> R+D+i, planning, finances, technology transfer; deontology; professional environment, entrepreneurship; ICT based marketing	8 hours

## 4. TEACHING - LEARNING METHODOLOGIES. FORMATIVE ACTIVITIES.

### 4.1. Credits Distribution

Number of on-site hours:	60
Number of hours of student work:	90: Class preparation, autonomous learning, exam preparation, project proposal preparation.
Total hours	150

### 4.2. Methodological strategies, teaching materials and resources

Theory classes	<ul style="list-style-type: none"> <li>• Presentation and/or theoretical concept revision.</li> <li>• Seminars and other activities</li> <li>• FlipTeaching experiences</li> </ul>
Practice classes:	<ul style="list-style-type: none"> <li>• Presentation and/or practical concept revision.</li> <li>• Practical sessions</li> <li>• Oral presentations and other activities</li> </ul>
Tutoring hours (group, individual and online (web, forum, email))	<ul style="list-style-type: none"> <li>• Doubts solving</li> <li>• Support for autonomous learning</li> </ul>

## 5. ASSESSMENT: procedures, evaluation and grading criteria

Preferably, students will be offered a continuous assessment model that has characteristics of formative assessment in a way that serves as feedback in the teaching-learning process.

### 5.1. PROCEDURES

The evaluation must be inspired by the criteria of continuous evaluation (Learning Assessment Guidelines, LAG, art 3). However, in compliance with the regulations of the University of Alcalá, an alternative process of final evaluation is made available to the student in accordance with the [Learning Assessment Guidelines](#) (last modified in the Governing Board of October 31, 2019) as indicated in Article 10, students will have a period of fifteen days from the start of the course to request in writing to the Director of the Polytechnic School their intention to take the non-continuous evaluation model adducing the reasons that they deem convenient. The evaluation of the learning process of all students who do not apply for it or are denied it will be done, by default, according to the continuous assessment model. The student has two calls to pass the subject, one ordinary and one extraordinary.

#### Ordinary call:

#### Continuous evaluation:

Students will be evaluated through continuous evaluation activities (AEC) distributed throughout the semester. In addition, students will have to develop a practical case (CP) related to the legislation block and tests (T) related to both the legislation and Telecommunication Skills blocks. Finally, and given the nature of the course, the students will carry out a group final project (PR), with intermediate deliverables and presentations.

#### Final Evaluation:

The evaluation will consist of a final evaluation test (PEF), the development of the practical case (CP) and the completion and presentation of a final project carried out in group or individually (PR). We recommend the students opting for the final evaluation to do the group project along the semester. Otherwise, the project will be individual.

### Extraordinary call:

The evaluation will follow the same principles and procedures than that of the final evaluation in the ordinary call.

## 5.2. EVALUATION

### Grading instruments:

- **Final evaluation test (PEF):** Final written test covering all course blocks.
- **Tests (T):** Related to the legislation and telecommunication engineering skills blocks
- **Practical case (CP):** Related to the legislation block
- **Continuous evaluation and class participation activities (AEC):** Tests, proposed problems, small assignments, etc.
- **Group work addressing an engineering project planning task (PR)** It will be splitted in several deliverables and their associated oral presentations along the course. Its nature will be specified within the first month of classes.

### Evaluation criteria:

The Evaluation Criteria must assess the degree of skills acquisition by the student. For this the following are defined:

- **CE1:** Knowledge of concepts on project management and its application, as well as the corresponding helping tools (Skills CB6-CB7, CGT3, CGT5, CGestión 2).
- **CE2:** Knowledge of regulations and legislation. (Skills CB6-CB8; CGT3; CGT6; CT2; CGestión 2).
- **CE3:** Knowledge of the professional market and the professional environment and society in general. (CB7-CB8; CGT6, CT2; CT5; CGestión 2)
- **CE4:** Ability to develop and manage a project, individually or in groups, write it in an original way, reference it and adequately document it and communicate its results (Skills CB7-CB10, CGT1-CGT5, CT1, CT2, CT5, CGestión 2).

### Grading criteria:

In the **ordinary call, continuous evaluation**, the relationship among skills, learning outcomes, evaluation criteria, instruments and grading is as follows:

Skills	Learning outcomes	Evaluation criteria	Evaluation instrument	Grading weight
CB6-CB8; CGT6; CT2; CGestión2	RA4; RA5	CE2; CE3	T	15%
CB6-CB8; CGT3, CGT6; CT2, CT5 CGestión2	RA3; RA4	CE1; CE2; CE3; CE4	CP	15%
CB6-CB8; CGT3; CT2, CT5 CGestión2	RA1; RA2; RA5	CE1; CE3; CE4	AEC	10%
CB6-CB10; CGT1- CGT5; CT1, CT2, CT3, CT5 CGestión2	RA1; RA2; RA3; RA5	CE1; CE2; CE3; CE4	PR	60%

It is considered that a student has the qualification of NOT PRESENTED if the project deliverable is not done (PR).

The group final project (PR) is considered to be a practice of the course, which is an essential requirement to pass the course, as determined in section 6.4 of the evaluation regulations.

In the **ordinary call, final evaluation and in the extraordinary call** the relationship among skills, learning outcomes, evaluation criteria, instruments and grading is as follows:

Skills	Learning outcomes	Evaluation Criteria	Evaluation instrument	Grading weight
CB6-CB8; CGT3, CGT6; CT2, CT5 CGestión2	RA3; RA4	CE1; CE2; CE3; CE4	CP	15%
CB6-CB8; CGT3, CGT6; CT2, CT5 CGestión2	RA1: RA3; RA4	CE1; CE2; CE3	PEF	25%
CB6-CB10. CGT1- CGT5; CT1, CT2, CT3, CT5 CGestión2	RA1; RA2; RA3; RA5	CE1; CE2; CE3; CE4	PR	60%



In the extraordinary call the students have the option to keep the grade obtained in the practical case (CP) and/or the group final project (PR).

## 6. BIBLIOGRAPHY

### 6.1. Basic Bibliography

- A guide to the project management body of knowledge : PMBOK Guide 5<sup>th</sup> Ed. Project Management Institute, 2013.
- A guide to the project management body of knowledge : PMBOK Guide 6<sup>th</sup> Ed. Project Management Institute, 2017.
- A guide to the project management body of knowledge : PMBOK Guide. 7th Ed. Project Management Institute, 2021.
- Information Technology Project Management (7<sup>th</sup>-9<sup>th</sup> edition). Kathy Schwalbe. Cengage Learning. 2014-2018
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### 6.2. Additional Bibliography

- Director de Proyectos: Cómo Aprobar el Examen PMP® Sin Morir en el Intento. Pablo Lledó. Pablolledo.com 2016
- DIRECCIÓN Y GESTIÓN DE PROYECTOS. UN ENFOQUE PRÁCTICO. Autores: Alberto Domingo Ajenjo Editorial: Alfaomega Grupo Editor Año: 2005.
- DIRECCIÓN DE PROYECTOS: LAS CINCO FASES DE SU DESARROLLO Autores: Joseph W. Weiss, Rober K. Wysocki Editorial: Addison-Wesley Iberoamericana Año: 1994.
- ESTRATEGIAS Y TÁCTICAS EN LA DIRECCIÓN Y GESTIÓN DE PROYECTOS: PROJECT MANAGEMENT Autores: Amendola, Luis José Editorial: Universidad Politécnica de Valencia Año: 2004.
- APPLIED SOFTWARE PROJECT MANAGEMENT Autores: Andrew Stellman, Jennifer Greene Editorial: OReilly Media Año: 2005 .
- SOFTWARE PROJECT MANAGEMENT: A UNIFIED FRAMEWORK Autores: Walker Royce Editorial: Addison-Wesley Professional Año: 1998.

## **Disclosure Note**

The University of Alcalá guarantees to its students that, if due to health requirements the competent authorities do not allow the total or partial attendance of the teaching activities, the teaching plans will achieve their objectives through a teaching-learning and evaluation methodology in online format, which will return to the face-to-face mode as soon as these impediments cease.