

# Course guide

## 230683 - TFM MET - Master's Thesis

**Last modified:** 11/04/2025

**Unit in charge:** Barcelona School of Telecommunications Engineering  
**Teaching unit:** **Degree:** MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013).  
(Project subject).

**Academic year:** 2025    **ECTS Credits:** 30.0    **Languages:** English

### LECTURER

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**Coordinating lecturer:**

**Others:**

### REQUIREMENTS

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The Master's Thesis (TFM) must be the last enrolled subject, but it can be enrolled jointly with another subject.

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

- CE1. Ability to apply information theory methods, adaptive modulation and channel coding, as well as advanced techniques of digital signal processing to communication and audiovisual systems.
- CE2. Ability to develop radio-communication systems: antennas design, equipment and subsystems, channel modeling, link dimensioning and planning.
- CE3. Ability to implement wired/wireless systems, in both fix and mobile communication environments.
- CE4. Ability to design and dimension transport, broadcast and distribution networks for multimedia signals
- CE5. Ability to design radio-navigation and location systems, as well as radar systems.
- CE6. Ability to model, design, implement, manage, operate, administrate and maintain networks, services and contents
- CE7. Ability to plan networks and decision-making about services and applications taking into account: quality of service, operational and direct costs, implementation plan, supervision, security processes, scalability and maintenance. Ability to manage and assure the quality during the development process
- CE8. Ability to understand and to know how to apply the functioning and organization of the Internet, new generation Internet technologies and protocols, component models, middleware and services
- CE9. Ability to deal with the convergence, interoperability and design of heterogeneous networks with local, access and core networks, as well as with service integration (telephony, data, television and interactive services).
- CE10. Ability to design and manufacture integrated circuits
- CE11. Knowledge of hardware description languages for high-complex circuits.
- CE12. Ability to use programmable logical devices, as well as to design analog and digital advanced electronics systems. Ability to design communication devices, such as routers, switches, hubs, transmitters and receivers in different bands.
- CE13. Ability to apply advanced knowledge in photonics, optoelectronics and high-frequency electronic
- CE14. Ability to develop electronic instrumentation, as well as transducers, actuators and sensors.
- CE15. Ability to integrate Telecommunication Engineering technologies and systems, as a generalist, and in broader and multidisciplinary contexts, such as bioengineering, photovoltaic conversion, nanotechnology and telemedicine.
- CE16. Ability to develop, direct, coordinate, and technical and financial management of projects in the field of: telecommunication systems, networks, infrastructures and services, including the supervision and coordination of other's subprojects; common telecommunications infrastructures in buildings or residential areas, including digital home projects; telecommunication infrastructures in transport and environment; with corresponding energy supply facilities and assessment of electromagnetic emissions and electromagnetic compatibility.

**Transversal:**

CT1a. 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.

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.

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.

CT5. 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.

## TEACHING METHODOLOGY

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Each student will be assigned a thesis advisor. The advisor and the student together prepare a working plan. During the development of the thesis, they hold periodical meetings where the advisor advises the student on next steps to follow. Most of the time the student works autonomously. At the end, the student prepares the technical report and performs the public presentation of the results.

## LEARNING OBJECTIVES OF THE SUBJECT

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The TFM has different objectives:

- Apply the acquired knowledge and scientific methodology to develop a technical project in the field of telecommunications engineering.
- Write a technical report.
- Publicly present and defend the outcome of the project.

## CONTENTS

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### Specific contents of the TFM area of knowledge

**Description:**

TFM contents depends on the project to develop.

**Full-or-part-time:** 750h

Guided activities: 750h

## GRADING SYSTEM

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The TFM is evaluated by a board assigned for that purpose. The evaluation board consists of a President, a Secretary and one other Board Member. The Secretary of the evaluation board is the TFM advisor, the President is, normally, a professor of the same department than the Secretary, and the third member is a professor of another department than the President and the Secretary. In order to determine the numerical mark of the TFM, the evaluation board will take into special account the scientific or technical quality of the work and technical report, the clarity of the presentation and oral defence, response to questions and, if applicable, the economic feasibility study, environmental impact and/or sustainable development.

## RESOURCES

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**Other resources:**



TFM regulations: Look at

<http://etsetb.upc.edu/ca/estudis/normatives-academiques/normatives-academiques-etsetb/> />

TFM procedures: Look at

<http://etsetb.upc.edu/ca/els-serveis/secretaria-oberta/procediments-i-tramits/tfm-masters-tic>