

# Master's degree in Applied Telecommunications and Engineering Management (MASTEAM)

The **master's degree in Applied Telecommunications and Engineering Management (MASTEAM)** ([master's degree website](#)) offers students a wide range of optional courses and prepares them for research or professional practice as engineers in cutting-edge information and communications technology (ICT) fields. The topics include Smart Cities, Internet of things, 5th generation of mobile communications, sensor networks, optical communications in the cloud, network management, massive data processing (Big Data) and signal processing, software-defined networking and radio (SDR and SDN), smart objects, network security, business models and management in the ICT sector. The master has mobility agreements with more than 30 European universities as well as internship agreements with more than 100 companies in the telecommunications sector.

Graduates of an official bachelor's degree (240 ECTS credits) and this master's degree may seek admission to a doctoral programme in telecommunications engineering or another ICT-related field.

## GENERAL DETAILS

### Duration and start date

One academic year, 60 ECTS credits. Starting September and February

### Timetable and delivery

Mornings and afternoons. For students starting in the autumn, the first semester is taught in the afternoons and the second semester in the mornings. For students starting in the spring, the first semester is taught in the mornings and the second semester in the afternoons. Face-to-face

### Fees and grants

Approximate fees for the master's degree, excluding other costs, €1,660 (€4,150 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

### Language of instruction

English

Information on [language use in the classroom and students' language rights](#).

### Location

[Castelldefels School of Telecommunications and Aerospace Engineering \(EETAC\)](#)

### Official degree

[Recorded in the Ministry of Education's degree register](#)

As this is an official master's degree of the European Higher Education Area (EHEA), graduates who hold an official bachelor's degree of at least 240 ECTS credits (4 years) and this master's degree of 60 ECTS credits fulfill the requirement of having at least 300 ECTS in official programmes and may therefore seek admission to a doctoral programme to pursue an official doctoral degree.

## ADMISSION

### General requirements

[Academic requirements for admission to master's degrees](#)

### Specific requirements

- An official bachelor's degree OR pre-EHEA diploma in telecommunications or ICT engineering, specialising in telecommunications systems, telematics (computer networks), electronic systems, audiovisual systems or telecommunications science and technology, or an official master's degree in telecommunications or ICT engineering. Any of the aforementioned degrees must have been obtained in an educational institution in a country belonging to

the European Higher Education Area (EHEA).

- With complementary coursework, another engineering degree from the EHEA or a telecommunications/ICT engineering degree from outside the EHEA. A validation committee will review these applications and may propose complementary coursework.
- Language requirements: English language certificate at Level B2 or above.

### Admission criteria

All applications will be evaluated according to the following criteria:

- Suitability of the student's prior qualifications and learning in relation to the content of the master's degree.
- Academic record.
- Curriculum vitae.
- Motivation letter and two letters of recommendation.

#### Language requirements:

CEFR English Level B2, which you can demonstrate in one of the following ways:

- Your mother tongue is English.
- You have studied in an English-speaking country (for at least one semester).
- You have taken an academic university programme taught in English (for at least one semester).
- You hold a European Higher Education Area degree that includes English Level B2.
- You hold one of the following English language certificates:

- Cambridge: FCE
- TOEFL PBT:  $\geq 567$ ; CBT:  $\geq 227$ ; IBT:  $\geq 87$
- IELTS: 5.5
- TOEIC: 750
- Escuela Oficial de Idiomas: Certificado de nivel avanzado (Level 5)

- You obtain a B2 [English certificate at the UPC](#)

Knowledge of Catalan and Spanish may be helpful for daily life.

Find more information on the [Language services and resources at the UPC website](#).

### Places

25 in September and 10 in February

### Pre-enrolment

Pre-enrolment period open.

Expected deadline: 14/07/2023.

[How to pre-enrol](#)

### Enrolment

[How to enrol](#)

### Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

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## DOUBLE-DEGREE AGREEMENTS

**Mobility:** The MASTTEAM has Erasmus agreements with more than 30 European universities and with other universities outside Europe that allow our students to spend one or two semesters abroad doing the master's thesis (and sometimes also optional courses). In this case students will only obtain the MASTTEAM degree with the mobility mention.

- [Consult the list of Erasmus agreements](#)

### Double-degree pathways with universities around the world

- Master's degree in Applied Telecommunication Engineering and Management / Master of Science in Technology (Aalto University School of Electrical Engineering, Finland)

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## PROFESSIONAL OPPORTUNITIES

### Professional opportunities

Graduates of this master's degree will be experts in designing, developing and managing telecommunications projects. They may work in the creation of innovative products, systems and procedures in accordance with regulations and environmental guidelines. They will also be able to pursue advanced research careers in international R&D divisions.

Graduates of this master's degree may work in the following industries:

- Network operation
- Provision of added-value telecommunications services
- Smart cities, Internet of Things
- Data centres
- Big data
- Companies in sectors that are currently being transformed by ICTs (automotive, audiovisual, food, logistics, energy, finance, etc.)
- Mobile applications
- Aeronautics and aerospace
- E-health
- Transport
- Research, development and innovation
- Universities
- Public administration
- E-education
- Digital entertainment
- Technical consulting
- Business consulting
- Electronic components
- Telecommunications regulators
- Computer science

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## Competencies

### Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

### Generic competencies

On completion of the course, students will be able to:

- Manage and plan, at technical and management levels, ICT-based developments, research projects and innovations.
- Plan, design, develop and manage technologically feasible telecommunications projects and applications based on the need to create or update a product or process in accordance with regulatory, environmental and economic guidelines.
- Prepare or evaluate a feasibility plan for the development of a product or service for a company.
- Keep up with trends in the telecommunications market, laws and guidelines set by various organisations, existing standards and recommendations, and current ICT trends and their impact on social, economic and cultural development.
- Carry out advanced research in telecommunications in the R&D departments of companies, research centres and universities.
- Direct and lead research groups.

### Specific competencies

On completion of the course, students will be able to:

- Design, implement and evaluate 5G and next-generation mobile communications networks.
- Design, implement and evaluate high-density heterogeneous networks using virtualisation techniques in the access network.

- Design, implement and evaluate cooperative mobile networks (Internet of Things) for various types of terminals (vehicles, home automation components, infrastructure, body sensors, etc.).
- Analyse, model and design large-scale communications networks.
- Solve optimisation problems in the field of communications networks.
- Design and implement wireless sensor networks for any application.
- Define the elements that characterise a business model for innovative ICT-based products.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### UPC school

[Castelldefels School of Telecommunications and Aerospace Engineering \(EETAC\)](#)

### Academic coordinator

[Ernesto Serrano](#)

### Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

### Academic regulations

[Academic regulations for master's degree courses at the UPC](#)

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## CURRICULUM

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Subjects	ECTS credits	Type
<b>FIRST SEMESTER</b>		
Applied Image Processing	3	Optional
Augmented Reality & Smart Objects	3	Optional
Body Sensor Nodes	3	Optional
Creativity and Engineering	3	Optional
Ict-Based Entrepreneurship	3	Compulsory
Network Engineering	3	Compulsory
Next Generation Wireless Communications and Iot	3	Compulsory
Next- Generation Optical Network Infrastructures for Future Cloud-Based Services	3	Optional
Optimization for Applied Engineering Design	3	Compulsory
Project on Ict-Based Business Models	3	Optional
Sensors and Interfaces	3	Compulsory
<b>SECOND SEMESTER</b>		
5G Mobile Network Planning	3	Optional
Big Data & Data Mining	6	Optional
Internet of Things and Ubiquitous IP	3	Optional
Low-Power Systems with Energy Harvesting	3	Optional
Network Security Authentication & Authorization	3	Optional
Network Support for 5G	3	Optional
Service Engineering	3	Optional
Software Defined Radio	3	Optional

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
Master's Thesis	12	Project

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March 2023. [UPC](#). Universitat Politècnica de Catalunya · BarcelonaTech