

# Master's degree in Industrial Engineering

This master's degree, which **qualifies graduates to practise the regulated profession of industrial engineer**, aims to provide multidisciplinary scientific and technical training based on an overview of industrial engineering combined with specialisation in a particular branch of industry.

At the UPC, the **master's degree in Industrial Engineering** and the bachelor's degree in Industrial Technology Engineering form an integrated programme.

More information on [the web page of this master's degree](#).

## Specialisations

- Automatic Control
- Biomedical Engineering
- Construction and Structures
- Electrical Engineering / Electronic Engineering
- Energy
- Materials
- Mechanics
- Industrial Scheduling
- Chemistry

## GENERAL DETAILS

### Duration and start date

Two academic years, 120 ECTS credits. Starting September and February

### Timetable and delivery

Mornings | Afternoons. Face-to-face

### Fees and grants

Approximate fees for the master's degree, excluding other costs, €2,215 (€5,187 for non-EU residents).

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

[More information about grants and loans](#)

### Language of instruction

Check the language of instruction for each subject in the course guide in the curriculum.

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

### Location

[Barcelona School of Industrial Engineering \(ETSEIB\)](#)

### Official degree

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

## ADMISSION

### General requirements

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

## Admission criteria

English level B2 and Spanish level B2.2 are required (foreign students). The university of origin and the first degree will be considered, particularly the appropriateness of the scientific and technological content of the basic curriculum, the shared industrial engineering module and the specific technology module of the first degree. The academic committee of the master's degree will assign a mark to candidates that is weighted in the following way:

- 50% of the mark reflects the correspondence between the competencies of the first degree and the competencies of the master's degree.
- 40% of the mark reflects the weighted average of the marks on the academic transcript (the marks for the thesis and optional subjects are not included).
- 10% of the mark reflects the candidate's professional experience.

## Places

250 places in September + 150 in February

## Pre-enrolment

Pre-enrolment period open.

Expected deadline: 10/12/2022.

[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

### Double-degree pathways at a single school

#### • Master's degree in Industrial Engineering (MUEI) + one of the following master's degrees:

- Master's degree in Automatic Control and Robotics / Master's degree in Automotive Engineering / Master's degree in Management Engineering / Master's degree in Nuclear Engineering / Master's degree in Energy Engineering

### Double-degree pathways with other universities in Spain

- MUEI + Master's degree in Business Management (Management of Organisations in the Knowledge Economy) (UOC)
- Bachelor's degree in Industrial Technology Engineering + MUEI + Bachelor's degree in Business Administration and Management (UOC)

### Double-degree pathways with foreign universities

- MUEI / *Ingénieur ISAE SUPAERO (École Nationale Supérieure de l'Aéronautique et de l'Espace, Toulouse, France)*
- MUEI and *Master of Science in Mechanical Engineering (Politecnico di Torino)*
- MUEI and *Master's in Management (École Des Hautes Études Commerciales (HEC))*

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## PROFESSIONAL OPPORTUNITIES

### Professional opportunities

Graduates of this master's degree will acquire a multidisciplinary overview of technology that will enable them to contribute to any kind of industrial endeavour. They will be qualified for employment in engineering firms and in technical, R&D, production and sales departments. Their broad skills will also allow them to work for companies offering consultancy services in the fields of technology, management, industrial plant design and project management. The master's degree enhances the employability of its graduates by making them versatile, flexible and able to develop and lead projects across all sectors of industry. The training they receive in organisation and management techniques prepares them to take on leadership roles in industrial and service company management, project management, public administration, institutions and multidisciplinary teams.

## 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.

## Specific competencies

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

- Understand, analyse and design electrical energy generation, transport and distribution systems.
- Understand, draft, calculate and design integrated manufacturing systems.
- Design and test machines.
- Analyse and design chemical processes.
- Design and analyse thermal machines and heat engines, hydraulic machines and industrial heat and cold facilities.
- Understand, analyse, use and manage sources of energy.
- Design electronic systems and industrial instrumentation.
- Design and draft automated production systems and advanced control processes.
- Organise and run businesses.
- Work out strategies and plans for a range of organisational structures.
- Understand business and employment law.
- Understand financial and cost accounting.
- Understand information systems for management, industrial organisation, production, logistics and quality management.
- Organise production systems, logistics and quality management systems.
- Organise work and human resource management in keeping with the principles of occupational health and safety.
- Practise integrated project management.
- Manage research, development and technological innovation.
- Design, build and use industrial plants.
- Understand building construction, facilities, infrastructure and urban development for industrial engineering.
- Calculate and design structures.
- Draft and design electrical and fluid facilities, lighting, air conditioning and ventilation, energy saving and efficiency systems, acoustics, communications, home automation and smart buildings, and safety facilities.
- Understand transport and industrial maintenance methods and techniques.
- Check and control facilities, processes and products.
- Draw up certificates, audits, verifications, tests and reports.
- Write, present and defend to university examiners an original, individually authored piece of work consisting of a professional industrial engineering project that displays all of the competencies acquired during the master's degree course.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### UPC school

[Barcelona School of Industrial Engineering \(ETSEIB\)](#)

### Academic coordinator

[Amaia Lusa Garcia](#)

### 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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[Major in specialisation in Mechanics](#)

[Major in specialisation in Biomedical Engineering](#)

[Major in specialisation in Automatic Control](#)

Major in specialisation in Electrical Engineering

Major in specialisation in Electronical Engineering

Major in specialisation in Materials

Major in specialisation in Industrial Sheduling

Major in specialisation in Chemistry

Major in specialisation in Structural Engineering and Construction

Major in specialisation in Energy

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December 2022. [UPC](#). Universitat Politècnica de Catalunya · BarcelonaTech