

# Master's degree in Structural and Construction Engineering

This master's degree provides a solid education in the field of **structural and construction engineering**. Students learn about topics such as the resistance mechanisms of structures; construction materials and processes; materials-related durability and technology; construction processes and organisational methods; effective management of construction projects; the environmental and socioeconomic impact of construction work; safety; quality; and sustainability.

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## GENERAL DETAILS

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### Duration and start date

1,5 academic year, 90 ECTS credits. Starting September and February

### Timetable and delivery

Mornings and afternoons. Face-to-face

### Fees and grants

Approximate fees for the master's degree, excluding degree certificate fee, €4,901 (€7,352 for non-EU residents).

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

[More information about grants and loans](#)

### Language of instruction

Subjects will be taught in Spanish or English, depending on the student's level of comprehension and on the teaching objectives of the master's degree course.

### Location

[School of Civil Engineering of Barcelona \(ETSECCPB\)](#)

### Official degree

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

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## ADMISSION

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### General requirements

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

### Specific requirements

For guaranteed access to this master's degree, applicants must have prior academic training in basic sciences (Mathematics, Physics, Chemistry, Drawing) and in subjects directly related to civil engineering, structural engineering and the construction of public works or buildings. These subject areas include, to a greater or lesser extent: Mechanics, Materials Resistance, Structural Calculation, Reinforced Concrete, Metal Structures, Construction Materials, Construction Procedures and Machinery.

### Admission criteria

- Accredited academic degree or course of study in the field of Structural and Construction Engineering: university and date of completion
- Other studies or courses followed
- Curriculum vitae
- Academic and/or professional experience

- Personal interview, where applicable

## Places

45

## Pre-enrolment

Pre-enrolment period open.

[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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## PROFESSIONAL OPPORTUNITIES

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### Professional opportunities

Graduates of this master's degree course have various professional options within the framework of structural analysis, the design and technology of structures and construction engineering, mainly in the sphere of civil and buildings engineering.

They will also be able to work in project and process development engineering; project and works management companies; direction of works; construction companies; companies involved in the management and exploitation of infrastructures; government agencies and public companies with activities related to the planning, design, execution and exploitation of civil and building works; technological research centres; and universities.

### 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 skills

On completing this master's degree, students will be able to:

- Conceive and design structures for buildings and public works that are durable, functional and aesthetically pleasing.
- Calculate and construct the structures outlined above, using classical materials (reinforced and prestressed concrete, structural steel, masonry, wood) and new materials (compounds, fibreglass, carbon fibre, stainless steel, aluminium, glass).
- Evaluate, repair or reinforce and maintain existing structures, including those that are historical and form part of the artistic heritage.
- Manage and carry out designs and works effectively, paying particular attention to technological and innovative aspects and to sustainability.
- Function as project managers, construction managers and work superintendents.
- Apply scientific methodology.
- Use their critical capacities.
- Create and innovate.
- Be rigorous in their approach in a way that is balanced with the socioeconomic reality of the field of construction.
- Produce mathematical models of engineering problems.

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## ORGANISATION

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**UPC school**[Barcelona School of Civil Engineering \(ETSECCPB\)](#)**Academic coordinator**[Jesús Miguel Bairan](#)**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](#)**CURRICULUM**

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
<b>FIRST SEMESTER</b>		
Advanced Design of Concrete Structures	5	Optional
Advanced Technics in Construction	5	Optional
Analysis and Design of Steel Structures	5	Optional
Composite Materials Structures	5	Optional
Construction Management	5	Compulsory
Continuum Mechanics	5	Optional
Economical and Financial Aspects of Construction	5	Optional
Foundation Structures	5	Optional
Fundamentals of Structural Projects	6	Compulsory
Inspection, Analysis and Restoration of Historical Constructions	5	Optional
Management Skills	5	Optional
Mixed and Composite Structures	5	Optional
Numerical Methods for Pdes	5	Optional
Structural Analysis	7.5	Optional
Structural Dynamics	5	Optional
Structural Management	5	Optional
Using Construction Waste	5	Optional
Workshops and Research Seminars	5.5	Compulsory
<b>SECOND SEMESTER</b>		
Advanced Course of Bridges	5	Optional
Advanced Materials in Construction	5	Optional
Bridges	5	Optional
Building Structures	5	Optional
Computational Structural Mechanics and Dynamics	5	Optional
Construction Seminars	2.5	Optional
Durability of Structures	5	Optional

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
Environmental Management	5	Optional
Experimental Techniques for the Characterization of Structural Materials	5	Optional
Functional Analysis in Continuum Mechanics	5	Optional
Nanotechnology in Construction	5	Optional
Non-Linear Analysis and Behaviour of Concrete Structures	5	Optional
Non-Linear Analysis of Steel Structures	5	Optional
Numerical Models in Civil and Structural Engineering	5	Optional
Performance Based Seismic Design and Assessment of Structures	5	Optional
Quality Management	5	Optional
Safety and Health in Construction	5	Optional
Safety Management in Construction	5	Optional
Structural Analysis Seminars	2.5	Optional
Structural Engineering	6	Compulsory
Structural Technology Seminars	2.5	Optional
<b>THIRD SEMESTER</b>		
Master's Thesis	30	Project