Master's degree in Structural and Construction Engineering

BARCELONA SCHOOL OF CIVIL ENGINEERING (ETSECCPB)

This master's degree provides a solid education in the field of **structural and construction engineering** (**master's degree website**). 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.

GENERAL DETAILS

Duration and start date

1,5 academic years, 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 other costs** (does not include non-teaching academic fees and issuing of the degree certificate):
€1,743 (€4,050 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.

Information on language use in the classroom and students' language rights.

Location

School of Civil Engineering of Barcelona

Official degree

Recorded in the Ministry of Science, Innovation and Universities

ADMISSION

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

New intake places

45

Pre-enrolment

Pre-enrolment for this master's degree is currently **closed**. Use the "Request information" form to ask for information on **upcoming pre-enrolment periods**.

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.

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Construction Methods and Project Management	5	Compulsory
Structural Design	6	Compulsory
Workshops and Research Seminars	5.5	Compulsory
Advanced Construction Techniques	5	Optional
Advanced Design of Concrete Structures	5	Optional
Analysis and Design of Steel Structures	5	Optional
Composite Structures	5	Optional
Construction Economics and Finance	5	Optional
Continuum Mechanics	5	Optional
Foundation Structures	5	Optional
Inspection, Analysis and Restoration of Historical Constructions	5	Optional
Management Skills	5	Optional
Mixed and Composite Structures	5	Optional
Numerical Methods for Partial Differential Equations	5	Optional
Structural Analysis	7.5	Optional
Structural Dynamics	5	Optional
Structural Management	5	Optional
Use of Construction Waste	5	Optional
SECOND SEMESTER		
Structural Engineering	6	Compulsory
Advanced Course on Bridges	5	Optional
Advanced Materials in Construction	5	Optional
BIM Construction Seminars	2.5	Optional

Subjects	ECTS credits	Type
Bridges	5	Optional
Building Structures	5	Optional
Computational Mechanics Project Laboratory	5	Optional
Computational Methods for Advanced Assessment of Concrete Structures	5	Optional
Durability of Structures	5	Optional
Environmental Management	5	Optional
Experimental Characterisation Techniques for Structures and Structural Materials	5	Optional
Fem-Based Advanced Analysis of Steel Structures and Practical Case Studies	5	Optional
Functional Analysis in Continuum Mechanics	5	Optional
Health and Safety in Construction	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 Management in Construction	5	Optional
Structural Analysis Seminars	2.5	Optional
Structural Optimisation	5	Optional
Structural Technology Seminars	2.5	Optional
THIRD SEMESTER		
Master's Thesis	30	Project

PROFESSIONAL OPPORTUNITIES

Professional opportunities

Graduates of this naster’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 degree or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, teamwork, proper use of information resources, knowledge of a foreign language (preferably English) and gender perspective.

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.

DOUBLE-DEGREE AGREEMENTS

Double-degree pathways at the UPC

- Master's degree in Structural and Construction Engineering + Master's degree in Civil Engineering

QUALITY ACCREDITATION

Check the degree’s main quality indicators in the University Studies in Catalonia portal of the Catalan University Quality Assurance Agency. Find information on topics such as degree evaluation results, student satisfaction and graduate employment data.
Further information

ACADEMIC ORGANISATION

UPC school
Barcelona School of Civil Engineering (ETSECCPB)

Academic coordinator
José Turmo Coderque

Academic calendar
General academic calendar for bachelor’s, master’s and doctoral degrees

Academic regulations
Academic regulations for master's degrees at the UPC

MASTER'S DEGREE WEBSITE