

MSc Program on Structural and Construction Engineering

The Master degree will be achieved after 90 ECTS credits are completed; 60 credits from the courses and 30 from the Master Thesis. The 60 ECTS credits corresponding to the courses can be completed in two semesters. All the courses will take place at the Civil Engineering School of Barcelona (E.T.S.de Ingenieros de Caminos, Canales y Puertos de Barcelona).

The courses are organized in three areas corresponding to the main fields of the structural and construction engineering. These areas are: Structural Analysis, Structural Design and Construction.

The Master program is focused on research and also on professional practice. Therefore, some of the lectures are research oriented, others are practice oriented and other are both practice and research oriented (called academic oriented).

The program is divided in 3 groups, as shown in table 1.

Table 1.- MSc Program on Structural and Construction Engineering

GROUP 1 (15 ECTS)	Analysis (5)	Design (5)	Construction (5)
GROUP 2 (30 ECTS)	Analysis (30)	Design (30)	Construction (30)
GROUP 3 (15 ECTS)	Analysis, Design and/or Construction (15)		
MASTER THESIS (30 ECTS)	Analysis, Design and/or Construction (30)		

Group 1 is made up of 3 courses, of 5 ECTS credits, which are compulsory for all the students

Group 2 is made up of courses, selected by the student in one of the master's areas (all the courses must be from the same area), with a total amount of 30 ECTS credits. The courses can be chosen from the list shown in table 2.

Group 3 is made up of courses, selected by the student in any of the master's areas, up to 15 ECTS credits. The courses can also be chosen from the list shown in table 2.

The Master's degree gives access to the PhD program if the courses selected by the student are research oriented or academic oriented. The orientation of the courses is also shown in table 2, where R means research, A means academic and P means professional.

Table 2.- Courses of the MSc Program on Structural and Construction Engineering

ANALYSIS	DESIGN	CONSTRUCTION
Solid and Structural Mechanics (5) - A	Conceptual Design of Structures (5) - A	The Construction Industry (5) -A
<ul style="list-style-type: none"> - Structural analysis applications (4) - P - Advanced structural mechanics (6) - A - RFP structures (4) - A - Earthquake and dynamic engineering (5) - A - Advanced solid mechanics (5) - A - Optimization methods in structural engineering (4) - A - Functional analysis in mechanics (5) - I - Structural failure mechanics(5) - R - Numerical Methods(5) - A - Seminars (6) - A - Workshops (6) - A 	<ul style="list-style-type: none"> - Reinforced and Prestressed Concrete Structures (5) - A - Steel Structures (5) - A - Composite structures (5) - A - Bridges (5) - A - Building Structures (5) - A - Inspection, maintenance, evaluation and retrofitting of structures (5) - A - Nonlinear analysis and behaviour of concrete structures (5) - R - Nonlinear analysis of steel structures (2,5) - R - Advanced bridge course (5) - R - Inspection, analysis and retrofitting of historical buildings (2,5) - R - Experimental techniques for material characterization (2,5) - A - Cement science and technology (2,5) - R 	<ul style="list-style-type: none"> - Construction case studies (5) - P - Heritage construction management (5) - P - Management skills (5) - P - Economic and financial aspects of construction (5) - A - Quality management (5) - A - Safety management (5) - A - Environment management (5) - A - Advanced materials for construction (5) - A - Advanced construction methods (5) - A - Use of construction waste (5) - R - Durability of structures (5) -R