

Master's degree in Water Engineering

The aim of the [master's degree in Water Engineering](#) is to produce professionals who have a multidisciplinary engineering background that allows them to tackle the research, design and analysis of infrastructure and modelling and management projects in hydrotechnology and the environment. These professionals will be able to advise public administrations, companies and industries at local, regional, national and international levels.

The master's degree includes a **double major in Urban Water Cycle Operations** in collaboration with the General Water Society of Barcelona (SGAB).

GENERAL DETAILS

Duration and start date

1.5 academic years, 90 ECTS credits. Starting September

Timetable and delivery

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):

€2,490 (€9,496 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 Civil Engineering](#)

Official degree

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

ADMISSION

General requirements

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

Places

30

Pre-enrolment

Pre-enrolment period open.

Expected deadline: 01/07/2025.

[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](#).

Professional opportunities

- Water resources engineer responsible for planning, managing and controlling water resources in public or private sectors in agriculture, energy and urban management.
- Water treatment specialist: expert in the management of drinking water or wastewater treatment plants who supervises water purification, desalination and reuse processes.
- Environmental consultant: advisor specialising in projects related to the sustainable management of aquatic areas who prepares environmental impact studies and mitigation plans for both public and private sectors.
- Project manager in hydrological, hydraulic or coastal engineering responsible for managing and executing projects related to constructing and maintaining hydraulic infrastructure, such as dams, distribution networks, drainage systems and channels, and coastal protection works.
- Hydrological or hydraulic engineer dedicated to the study of the behaviour of water in natural or artificial systems who contributes to projects on river and coastal flooding, erosion or energy use in hydroelectric power plants.
- Risk management specialist who analyses, manages and designs strategies to prevent and mitigate the risks associated with river and coastal floods, droughts and other natural phenomena related to aquatic environments.
- Researcher in the field of hydrological, hydraulic or coastal engineering: participation in innovation projects and the development of new technologies or methods for efficient water management, such as monitoring systems, simulation models and new treatment techniques.
- Specialist in sanitation systems and related infrastructure responsible for designing, supervising and maintaining sanitation and sewage systems, as well as other urban water management infrastructure.
- Water sustainability manager: expert who works in companies or organisations to ensure the efficient and responsible use of water resources within a framework of sustainability.
- Professor or instructor in the field of water engineering who is dedicated to university education or technical training at vocational schools, research centres and educational organisations.

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

- Use impact management and assessment instruments in river, coastal and groundwater environments, from an economic perspective and according to current legislation.
- Lead actions based on project evaluation parameters and analyse their viability.
- Implement conventional and non-conventional solutions in the field of water engineering.
- Carry out and present and defend before an examination committee an original, individual piece of work consisting of a study or project in the field of water engineering that synthesises the competencies acquired, incorporates new developments and contributes new ideas.
- Integrate the values of sustainability and understand the complexity of systems, with the aim of undertaking or promoting actions that restore and maintain the health of ecosystems and improve justice, thereby generating visions of sustainable futures.
- Analyse problems that require making autonomous, informed and reasoned decisions in order to act with social responsibility following ethical values and principles.
- Evaluate inequalities based on sex and gender to design solutions that resolve them.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

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

Academic calendar

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

CURRICULUM		
Subjects	ECTS credits	Type
FIRST SEMESTER		
Coastal Engineering and Oceanography	5	Compulsory
Digitalisation, Data Science and Machine Learning in Water Engineering	5	Compulsory
Hydrogeology for Sustainable Development	5	Compulsory
Integrated Management of Water Resources	5	Compulsory
Sustainable Planning for Hydraulic Infrastructure Design	5	Compulsory
Water Quality and Treatment	5	Compulsory
SECOND SEMESTER		
Advanced Operations and Service Digitalisation	5	Optional
Aquifer-Dependant Natural Systems	5	Optional
Coastal Processes and Dynamics	5	Optional
Coastal Sustainability: Defence and Realignment	5	Optional
Debris Flow and Flash Flood. Risk, Vulnerability, Hazard and Resilience Concepts	5	Optional
Interaction Between Groundwater and Civil Works	5	Optional
Management of Water and Waste Treatment Plants	5	Optional
Pollutant Transport Modelling	5	Optional
River Dynamics	5	Optional
Stochastic Methods in Hydrology	5	Optional
Water Company Management	5	Optional
Water Utility Management	5	Optional
THIRD SEMESTER		
Coastal Flooding: Impacts, Conflicts and Risks	3	Optional
Global Warming Effects, Flood and Drought Management	3	Optional
Life Cycle Analysis and Sustainability	5	Optional
Urban Hydrology	5	Optional
Water Treatment	5	Optional
Master's Thesis	30	Project