UNIVERSITAT POLITÈCNICA DE CATALUNYA
UPC BARCELONATECH

Master's degree in Computational and Data-Assisted Engineering

BARCELONA SCHOOL OF CIVIL ENGINEERING (ETSECCPB)

The master's degree in Computational and Data-Assisted Engineering provides comprehensive cross-disciplinary training in computational engineering and data science through modelling, simulation, data analysis and machine learning in industrial and scientific contexts. The programme equips students with practical skills in advanced computational tools to solve complex problems by developing new computational methods and data-driven solutions, and offers in-depth training in innovative technologies such as machine learning and big data processing.

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):
€1,743 (€4,050 for non-EU residents).
More information about fees and payment options
More information about grants and loans

Language of instruction
English

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

Official degree
Recorded in the Ministry of Science, Innovation and Universities

ADMISSION

General requirements
Academic requirements for admission to master's degrees

Specific requirements
Direct admission:
This master's degree is aimed at graduates in engineering, mathematics and physical sciences who wish to orient their career towards multidisciplinary engineering.

With bridging courses:
The academic committee of the master's degree will assess applications from students with other degrees to determine, where needed, the specific bridging courses required (up to a maximum of 18 ECTS credits).

Places
30

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.

PROFESSIONAL OPPORTUNITIES

Professional opportunities
- Numerical modelling and optimisation engineer in civil engineering.
- Computational simulation engineer in mechanical engineering.
- Structural or fluid dynamics (CFD) analysis engineer.
- Specialist in machine learning applied to engineering.
- Industrial or predictive data analyst in digital technologies.
- Technical innovation consultant in aerospace engineering.
- Researcher or professor in academic institutions.

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, teamwork, proper use of information resources, knowledge of a foreign language (preferably English) and gender perspective.

- Manage complex simulations involving multiple physical phenomena accurately.
- Lead cross-disciplinary teams in the development of innovative computational tools and data-based methods to achieve a comprehensive understanding of a problem.
- Implement data-driven solutions by integrating machine learning, statistical methods and optimisation algorithms to improve the performance of engineering systems.
- Incorporate principles of sustainability and ethical responsibility in engineering solutions to address the environmental and social impacts of technologies.
- Critically assess environmental, social and economic impacts of products and services, promoting sustainable and socially just actions with relevant stakeholders.
- Make informed and reflective decisions in complex situations, applying ethical principles in academic, professional and social contexts.
- Integrate the gender perspective into discipline-specific solutions.
- Design creative solutions to social or technological problems.
- Critically and responsibly analyse information sources.

ACADEMIC ORGANISATION

UPC school
Barcelona School of Civil Engineering (ETSECCPB)

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