

Bachelor's degree in Mechanical Engineering

Barcelona East School of Engineering (EEBE)

The **bachelor's degree in Mechanical Engineering**, provides a solid grounding in the design, development and use of machinery; mechanical processes and systems; criteria for the selection of materials; and the structural design of production systems and processes. You will acquire the knowledge needed to analyse, calculate, design and test machines, industrial installations, hydraulic and thermal engines, industrial structures and constructions, and production systems. You will also receive multidisciplinary training in fluid mechanics, thermal technology, electricity, automation, the design and construction of industrial HVAC systems, and graphic engineering techniques.

GENERAL DETAILS

Duration

4 years

Study load

240 ECTS credits (including the bachelor's thesis). One credit is equivalent to a study load of 25-30 hours.

Delivery

Face-to-face

Language of instruction

Check the language of instruction for each subject (and timetable) in the course guide in the curriculum.

Information on [language use in the classroom and students' language rights](#).

Fees and grants

Approximate fees per academic year: €1,107 (€2,553 for non-EU residents). [Consult the public fees system based on income \(grants and payment options\)](#).

Location

[Barcelona East School of Engineering \(EEBE\)](#)

Official degree

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

ADMISSION

Places

235

Registration and enrolment

[What are the requirements to enrol in a bachelor's degree course?](#)

Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

DOUBLE-DEGREE AGREEMENTS

Double-degree pathways at the UPC

You have the possibility of complementing this bachelor's degree with a specific pathway towards a double degree by taking an additional number of credits from one of the other degrees taught at the School. Generally, this involves an additional year of study. To gain admission to a double degree of this kind you must have taken a minimum number of credits on one of the bachelor's degrees. The number of places is limited.

- Bachelor's degree in Mechanical Engineering + Bachelor's degree in Materials Engineering
- Bachelor's degree in Mechanical Engineering + Bachelor's degree in Industrial Electronics and Automatic Control Engineering

With universities around the world

- Bachelor's degree in Mechanical Engineering (GEMEC) + Master's degree in Materials Science and Advanced Materials + *Diplôme Ingénieur de l'EEIGM* (École d'Ingénieurs Européenne en Génie de Matériaux (EEIGM), Université de Lorraine, Lunéville, France)
- Bachelor's degree in Mechanical Engineering + Master's degree in Materials Science and Advanced Materials + *Diplôme Ingénieur* (École Centrale Lille, École Centrale de Lyon, École Centrale de Marseille, École Centrale de Nantes, CentraleSupélec, Groupe des Écoles Centrales (GEC), France)
- Bachelor's degree in Mechanical Engineering + Master in Interdisciplinary and Innovative Engineering + *Diplôme Ingénieur* (École Centrale Lille, École Centrale de Lyon, École Centrale de Marseille, École Centrale de Nantes, CentraleSupélec, Groupe des Écoles Centrales (GEC), France)
- Bachelor's degree in Mechanical Engineering + Master in Chemical Engineering + *Diplôme Ingénieur* (École Centrale Lille, École Centrale de Lyon, École Centrale de Marseille, École Centrale de Nantes, CentraleSupélec, Groupe des Écoles Centrales (GEC), France)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Planning, management, execution and assessment of engineering projects related to mechanical engineering.
- Management, design, assembly and maintenance of industrial and production systems and installations in the fields of mechanical, electromechanical and thermal engineering and fluid mechanics.
- Calculation and design of hydraulic and thermal engines.
- Projects in the industrial HVAC sector and the processing and transport of fluids.
- Design, management and maintenance of equipment and industrial installations, structures and constructions.
- Drafting of technical, advisory and feasibility reports.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

Academic calendar

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

Academic regulations

[Academic regulations for bachelor's degree courses at the UPC](#)

Language certification and credit recognition

Queries about [language courses and certification](#)

Barcelona East School of Engineering (EEBE)

This bachelor's degree is also taught at

- Manresa · EPSEM · [Show degree](#)
- Terrassa · ESEIAAT · [Show degree](#)
- Vilanova i la Geltrú · EPSEVG · [Show degree](#)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Calculus	6	Compulsory
Chemistry	6	Compulsory
Graphic Expression	6	Compulsory
Informatics	6	Compulsory
Physics I: Fundamentals of Mechanics	6	Compulsory
SECOND SEMESTER		
Algebra and Multivariable Calculus	6	Compulsory
Environmental Technologies and Sustainability	6	Compulsory
Materials Science and Technology	6	Compulsory
Numerical Calculus. Differential Equations	6	Compulsory
Physics II: Fundamentals of Electromagnetism	6	Compulsory
THIRD SEMESTER		
Electrical Systems	6	Compulsory
Fluid Mechanics	6	Compulsory
Industrial Control and Automation	6	Compulsory
Mechanical Systems	6	Compulsory
Statistics	6	Compulsory
FOURTH SEMESTER		
Business	6	Compulsory
Dynamics	6	Compulsory
Elasticity	6	Compulsory
Electronic Systems	6	Compulsory
Thermodynamics and Heat Transfer	6	Compulsory
FIFTH SEMESTER		
Further Graphic Expression. Mechanical Design	6	Compulsory
Kinematics and Dynamics of Machines	6	Compulsory
Materials Science and Technology	6	Compulsory
Numerical Methods in Mechanical Engineering	6	Optional
Strength of Materials	6	Compulsory
SIXTH SEMESTER		
Engineering Design	6	Compulsory
Fluid Engineering	6	Compulsory
Industrial Structures and Constructions	6	Compulsory
Machine Design	6	Compulsory
Manufacturing	6	Compulsory
SEVENTH SEMESTER		
Additive Manufacturing 1	3	Optional

Subjects	ECTS credits	Type
Additive Manufacturing 2	3	Optional
Advanced Computer-Aided Design	6	Optional
Advanced Statistics and Applications in Engineering	6	Optional
Applied Photonics	6	Optional
Artificial Intelligence for Engineering	6	Optional
Automotive and Vehicles Safety	6	Optional
Building Technology and Industrial Facilities	6	Optional
Climate Change: Science, Energy, Economics, Politics and the Future	3	Optional
Communication in Technical English	9	Optional
Computational Engineering	6	Optional
Computational Fluid Mechanics and Heat Transfer	6	Optional
Data Engineering and a Business Analytics	6	Optional
Design and Implementation of Electronics Prototypes	6	Optional
Design Validation	6	Optional
Digital Microelectronic Design	6	Optional
Electronic Equipment	6	Optional
Facilities Projects	6	Optional
Fire Engineering	6	Optional
Fundamentals of Functional Materials	6	Optional
Implementation of Automatic Control System	6	Optional
Industrial Equipments and Installations	6	Optional
Innovation Management	6	Optional
Leadership and Management	6	Optional
Machine Elements	6	Optional
Manufacturing Technology	6	Optional
Mobile Devices Programming	6	Optional
Movement Simulation	6	Optional
Numerical Simulation Applied to Engineering	6	Optional
Physical Chemistry	6	Optional
Production Organisation	6	Compulsory
Programming for Engineers	6	Optional
Project Development I	6	Optional
Project Development II	6	Optional
Project Engineering & Management	6	Optional
Resources Recovery and Circular Economy	6	Optional
Steel Structures	6	Optional
Surface Technology	6	Optional
Technology and Sciences in Ancient Times: Egypt and Mesopotamia	6	Optional

Subjects	ECTS credits	Type
Thermal Engineering	6	Compulsory
Transport Phenomena	6	Optional
EIGHTH SEMESTER		
Bachelor's Thesis	24	Project