

Bachelor's degree in Mechanical Engineering

Manresa School of Engineering (EPSEM)

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

[Manresa School of Engineering \(EPSEM\)](#)

Official degree

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

ADMISSION

Places

180

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

PROFESSIONAL OPPORTUNITIES

Regulated profession

- Technical industrial engineer.
- Industrial engineer (after obtaining the master's degree in Industrial Engineering).

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](#)

Manresa School of Engineering (EPSEM)

This bachelor's degree is also taught at

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

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Chemistry	6	Compulsory
Environmental Technologies and Sustainability	6	Compulsory
Introduction to Computing	6	Compulsory
Mathematics I	6	Compulsory
Physics I	6	Compulsory
SECOND SEMESTER		

Subjects	ECTS credits	Type
Graphic Expression	6	Compulsory
Materials Science and Technology	6	Compulsory
Mathematics II	6	Compulsory
Physics II	6	Compulsory
Statistics	6	Compulsory
THIRD SEMESTER		
Business	6	Compulsory
Electrical Systems	6	Compulsory
Mathematics III	6	Compulsory
Mechanical Systems	6	Compulsory
Thermodynamics and Fluid Mechanics	6	Compulsory
FOURTH SEMESTER		
Electronic Systems	6	Compulsory
Engineering Skills	6	Optional
Industrial Control and Automation	6	Compulsory
Mechanics Technology	6	Compulsory
Operations Management	6	Compulsory
Strength of Materials	6	Compulsory
FIFTH SEMESTER		
Engineering Graphics	6	Compulsory
Fluid Dynamics Engineering	6	Compulsory
Materials Engineering	6	Compulsory
Mechanics and Mechanism Theory	6	Compulsory
Mechanics of Deformable Solids	6	Compulsory
SIXTH SEMESTER		
Kinematics and Machine Dynamics	6	Compulsory
Machine Design	6	Compulsory
Project Methodology, Management and Orientation	6	Compulsory
Structural Theory and Industrial Construction	6	Compulsory
Thermal Engineering	6	Compulsory
SEVENTH SEMESTER		
Advanced Graphic Representation for Design	6	Optional
Advanced Programming	6	Optional
Business English	6	Optional
CAD/CAE Technologies	6	Optional
Components and Machine Vibrations	6	Compulsory
Computer-Aided Design	6	Optional
Computer-Aided Manufacturing	6	Optional

Subjects	ECTS credits	Type
Construction Material Factories	6	Optional
Construction Materials	6	Optional
Data Management and Storage	6	Optional
Decision Optimisation and Theory	6	Optional
Design and Calculation of Structures	6	Optional
Design Methodology	6	Optional
Drillings Applied to Engeneering	6	Optional
Dynamic Systems	6	Optional
Energy Resources	6	Optional
Fuels and Thermal Processes	6	Optional
Geotechnical Engineering	6	Optional
Graphical User Interfaces	6	Optional
Industrial Construction and Architecture	6	Optional
Industrial Cutting Processes	6	Optional
Industrial Installations	6	Optional
Industrial Joining Processes	6	Optional
Innovation, People Management and Business Start-Up	6	Optional
Maintenance Management	6	Optional
Material Selection	6	Optional
Mathematical Tools for Structural Design	6	Optional
Metallic Materials	6	Optional
Modelling and Simulation of Dynamical Systems	6	Optional
Nuclear Technology	6	Optional
Polymers, Ceramics and Composites	6	Optional
Prevention of Occupational Risks	6	Optional
Quality Management and Integrated Quality, Safety and Environmental Management Systems	6	Optional
Structural Modelling, Analysis and Design	6	Optional
Topography	6	Optional
Urbanism and Urban Services	6	Optional
EIGHTH SEMESTER		
Bachelor's Thesis	24	Project