

Bachelor's degree in Automotive Engineering

The **bachelor's degree in Automotive Engineering** responds to the automotive industry's demand for automotive engineers who have specific skills and a mastery of both the product, that is, automobiles and their components, and the process of manufacturing them and managing the manufacturing process. The aim is to produce specialised engineers who have a comprehensive view of the automotive industry and its entire value chain.

You will follow a course of study that will give you a solid scientific grounding that will be complemented with subjects as diverse as design; materials science; mechanical, electrical and electronic engineering; and the use of ICTs, all of which are applied to the automotive industry. A large proportion of the degree is devoted to innovative technologies such as electric and hybrid propulsion or autonomous vehicles. Training is enhanced by industrial organisation and business management topics.

The degree has strong ties to the business sector through the Automotive Industry Cluster of Catalonia. Students can go on to take a **fourth year** at the **EPSEM** or the **Barcelona School of Industrial Engineering (ETSEIB)**, where the **master's degree in Automotive Engineering** is taught.

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

Fees and grants

Approximate fees per academic year: €1,660 (€2,490 for non-EU residents). [Consult the public fees system based on income \(grants and payment options\)](#).

Location

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

ADMISSION

Places

50

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](#).

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Leading and managing automotive engineering projects in assembly plants and the components industry, R&D and training centres, sales and post-sales and the world of racing.
- Conceiving, designing, developing, analysing and maintaining automobile systems and components.
- Improving products and reengineering.
- Organising and controlling production, quality assurance and logistics in manufacturing plants.
- Training production and post-sales teams.
- Applying and ensuring compliance with regulations in the automotive sector.

- Developing solutions to mobility problems.

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)

CURRICULUM

Subjects		ECTS credits	Type
FIRST SEMESTER			
Algebra		6	Compulsory
Automotive Sector		3	Compulsory
Calculus 1		6	Compulsory
Car's Chemistry		6	Compulsory
Graphic Expression 1		4.5	Compulsory
Physics 1		4.5	Compulsory
Major in (Eng) Menció (330grautom)	Algebra	6	Compulsory
	Automotive Sector	3	Compulsory
	Calculus 1	6	Compulsory
	Car's Chemistry	6	Compulsory
	Graphic Expression 1	4.5	Compulsory
	Physics 1	4.5	Compulsory
SECOND SEMESTER			
Automotive, Mobility and Sustainability		3	Compulsory
Calculus 2		6	Compulsory
Fundamentals of Computer Science		6	Compulsory
Graphic Expression 2		4.5	Compulsory
Materials		6	Compulsory
Physics 2		4.5	Compulsory

Subjects		ECTS credits	Type
Major in (Eng) Menció (330grautom)	Automotive, Mobility and Sustainability	3	Compulsory
	Calculus 2	6	Compulsory
	Fundamentals of Computer Science	6	Compulsory
	Graphic Expression 2	4.5	Compulsory
	Materials	6	Compulsory
	Physics 2	4.5	Compulsory
THIRD SEMESTER			
	Computer-Aided Design (Cad)	3	Compulsory
	Electrical Engineering	6	Compulsory
	Material Resistance	6	Compulsory
	Mathematics for Engineering	4.5	Compulsory
	Mechanical Engineering 1	6	Compulsory
	Mechanics of Fluids	4.5	Compulsory
Major in (Eng) Menció (330grautom)	Computer-Aided Design (Cad)	3	Compulsory
	Electrical Engineering	6	Compulsory
	Material Resistance	6	Compulsory
	Mathematics for Engineering	4.5	Compulsory
	Mechanical Engineering 1	6	Compulsory
	Mechanics of Fluids	4.5	Compulsory
FOURTH SEMESTER			
	Computer-Aided Manufacturing (Cam)	3	Compulsory
	Electronic Systems	6	Compulsory
	Finite Elements and Finite Volumes for Engineering	4.5	Compulsory
	Fluid Dynamics	6	Compulsory
	Mechanical Engineering 2	4.5	Compulsory
	Process Technologies and Materials Transformation	6	Compulsory
Major in (Eng) Menció (330grautom)	Computer-Aided Manufacturing (Cam)	3	Compulsory
	Electronic Systems	6	Compulsory
	Finite Elements and Finite Volumes for Engineering	4.5	Compulsory
	Fluid Dynamics	6	Compulsory
	Mechanical Engineering 2	4.5	Compulsory
	Process Technologies and Materials Transformation	6	Compulsory
FIFTH SEMESTER			
	Analysis of Systems and Control	6	Compulsory
	Computer-Aided Engineering (Cae)	3	Compulsory
	Mechanical Auxiliary Systems	4.5	Compulsory
	Quality Management	4.5	Compulsory
	Structural Calculations of the Vehicle	6	Compulsory

Subjects		ECTS credits	Type
Thermal Motors		6	Compulsory
Major in (Eng) Menció (330grautom)	Analysis of Systems and Control	6	Compulsory
	Computer-Aided Engineering (Cae)	3	Compulsory
	Mechanical Auxiliary Systems	4.5	Compulsory
	Quality Management	4.5	Compulsory
	Structural Calculations of the Vehicle	6	Compulsory
	Thermal Motors	6	Compulsory
SIXTH SEMESTER			
Automated Manufacturing		6	Compulsory
Electric Systems		6	Compulsory
Habitability and Security		3	Compulsory
Information and Communication Technologies in the Automotive Industry		6	Compulsory
Prototypes		3	Compulsory
Vehicle Dynamics		6	Compulsory
Major in (Eng) Menció (330grautom)	Automated Manufacturing	6	Compulsory
	Electric Systems	6	Compulsory
	Habitability and Security	3	Compulsory
	Information and Communication Technologies in the Automotive Industry	6	Compulsory
	Prototypes	3	Compulsory
	Vehicle Dynamics	6	Compulsory
SEVENTH SEMESTER			
Analogue Electronics		6	Optional
Automatic Regulation		6	Optional
Business		6	Optional
Components and Machine Vibrations		6	Optional
Digital Systems		6	Optional
Embedded Control Systems		6	Optional
Mechanics and Mechanism Theory		6	Optional
Modelling and Simulation of Dynamical Systems		6	Optional
Prevention of Occupational Risks		6	Optional
Robotic Systems		6	Optional
Safe and Efficient Driving		3	Optional

Subjects		ECTS credits	Type	
Major in (Eng) Menció (330grautom)	Legislation and Regulatory Framework	3	Compulsory	
	Production Systems and Logistics	6	Compulsory	
	Propulsion Systems	6	Compulsory	
	Thermal Design	3	Compulsory	
	Analogue Electronics	6	Optional	
	Automatic Regulation	6	Optional	
	Business	6	Optional	
	Components and Machine Vibrations	6	Optional	
	Digital Systems	6	Optional	
	Embedded Control Systems	6	Optional	
	Mechanics and Mechanism Theory	6	Optional	
	Modelling and Simulation of Dynamical Systems	6	Optional	
	Prevention of Occupational Risks	6	Optional	
	Robotic Systems	6	Optional	
	Safe and Efficient Driving	3	Optional	
EIGHTH SEMESTER				
	Digital Electronics	6	Optional	
	Electronic Instrumentation	6	Optional	
	Industrial Informatics	6	Optional	
	Kinematics and Machine Dynamics	6	Optional	
	Machine Design	6	Optional	
	Maintenance Management	6	Optional	
	Mechanics Technology	6	Optional	
	Power Electronics	6	Optional	
	Project Methodology, Management and Orientation	6	Optional	
	Structural Theory and Industrial Construction	6	Optional	
	Bachelor's Thesis	12	Project	
Major in (Eng) Menció (330grautom)	Digital Electronics	6	Optional	
	Electronic Instrumentation	6	Optional	
	Industrial Informatics	6	Optional	
	Kinematics and Machine Dynamics	6	Optional	
	Machine Design	6	Optional	
	Maintenance Management	6	Optional	
	Mechanics Technology	6	Optional	
	Power Electronics	6	Optional	
	Project Methodology, Management and Orientation	6	Optional	
	Structural Theory and Industrial Construction	6	Optional	
		Bachelor's Thesis	12	Project

