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

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: €1,660 (€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			
Advanced Automation		6	Optional
Analogue Electronics		6	Optional
Automatic Control		6	Optional
Automatic Regulation		6	Optional
Business		6	Optional
Components and Machine Vibrations		6	Optional
Digital Systems		6	Optional
Embedded Control Systems		6	Optional
Environmental Technology and Sustainability		6	Optional
Heat Technology		6	Optional
Mechanics and Mechanism Theory		6	Optional
Modelling and Simulation of Dynamical Systems		6	Optional
Prevention of Occupational Risks		6	Optional
Project Management		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
	Advanced Automation	6	Optional
	Analogue Electronics	6	Optional
	Automatic Control	6	Optional
	Automatic Regulation	6	Optional
	Business	6	Optional
	Components and Machine Vibrations	6	Optional
	Digital Systems	6	Optional
	Embedded Control Systems	6	Optional
	Environmental Technology and Sustainability	6	Optional
	Heat Technology	6	Optional
	Mechanics and Mechanism Theory	6	Optional
	Modelling and Simulation of Dynamical Systems	6	Optional
	Prevention of Occupational Risks	6	Optional
	Project Management	6	Optional
	Safe and Efficient Driving	3	Optional
EIGHTH SEMESTER			
Automotive Project		4.5	Optional
Digital Electronics		6	Optional
Economics and Business		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
Optimisation and Simulation		4.5	Optional
Organisation and Management		4.5	Optional
Power Electronics		6	Optional
Project Methodology, Management and Orientation		6	Optional
Structural Theory and Industrial Construction		6	Optional
System Dynamics		4.5	Optional
Bachelor's Thesis		12	Project

Subjects		ECTS credits	Type
Major in (Eng) Menció (330grautom)	Automotive Project	4.5	Optional
	Digital Electronics	6	Optional
	Economics and Business	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
	Optimisation and Simulation	4.5	Optional
	Organisation and Management	4.5	Optional
	Power Electronics	6	Optional
	Project Methodology, Management and Orientation	6	Optional
	Structural Theory and Industrial Construction	6	Optional
	System Dynamics	4.5	Optional
	Bachelor's Thesis	12	Project