Training the engineers of the future

At the Manresa School of Engineering you will find:
• teaching staff who are committed to students’ learning and well-being,
• cutting-edge research,
• degrees that integrate theoretical and practical education through work on real projects,
• many options to extend your CV, such as international mobility programmes, work placements and a job bank.

The bachelor’s degree provided access to the master’s degree in Automotive Engineering at the Barcelona School of Industrial Engineering (ETSEIB).

Further information:
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Manresa School of Engineering
Barcelona School of Industrial Engineering
The bachelor’s degree in Automotive Engineering responds to the automotive industry’s demand for professional engineers with very specific knowledge, who have mastered the product – the automobile and its components – and the process, that is, production and management. The aim is to produce specialised engineers who have a comprehensive view of the automotive industry and its value chain.

The bachelor’s degree offers courses with a solid scientific grounding and advanced training in disciplines as diverse as design, materials science, mechanics, electricity, electronics and the use of ICT, all of them applied to automotive engineering. A large part of the degree is devoted to innovative technologies such as electric and hybrid propulsion and autonomous vehicles. Students’ training is complemented by industrial scheduling topics such as quality management.

### Curriculum

**1st year**

**1st semester**
- Algebra: 6
- Physics I: 4.5
- Calculus I: 6
- Graphic Expression I: 4.5
- Automotive Sector: 3
- Automotive Chemistry: 3

**2nd semester**
- Materials: 6
- Calculus II: 4.5
- Physics II: 6
- Graphic Expression II: 4.5
- Automotive Engineering, Mobility and Sustainability: 3
- Fundamentals of Informatics: 6

**2nd year**

**1st semester**
- Mathematics for Engineering: 4.5
- Strength of Materials: 6
- Computer-Aided Design (CAD): 3
- Mechanical Engineering I: 6
- Fluid Mechanics: 4.5
- Electrotechnics: 6

**2nd semester**
- Finite Elements and Finite Volumes in Engineering: 4.5
- Materials Processing and Transformation Technology: 6
- Computer-Aided Manufacturing (CAM): 3
- Mechanical Engineering II: 4.5
- Fluid Dynamics: 6
- Electronic Systems: 6

**3rd year**

**1st semester**
- Vehicle Structural Analysis: 6
- Heat Engines: 6
- Computer-Aided Engineering (CAE): 3
- Auxiliary Mechanical Systems: 4.5
- Quality Management: 4.5
- System and Control Analysis: 6

**2nd semester**
- Vehicle Dynamics: 6
- Prototypes: 3
- ICTs for the Automotive Industry: 6
- Automated Manufacturing: 6
- Electrical Systems: 6
- Habitability and Safety: 3

**4th year**

**1st semester (EPSEM)**
- Legislation and Regulatory Framework: 3
- Propulsion Systems: 6
- Thermal Design: 3
- Production and Logistics Systems: 6
- Work Placement: 12

**2nd semester (EPSEM)**
- Work Placement: 18
- Bachelor’s Thesis: 12

**1st semester (ETSEIB)**
- Environmental and Sustainability Technology: 6
- Electrical Engineering Automotive Project: 4.5
- Project Management: 6
- Systems Dynamics: 4.5
- Organisation and Management: 4.5
- Simulation and Optimization: 4.5

**2nd semester (ETSEIB)**
- Economics and Business: 6
- Automatic Control: 6
- Thermotechnics: 6
- Bachelor’s Thesis: 12

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### What we offer?

- You will acquire a solid scientific grounding that will allow you to understand current and future technology in the world of the automobile and the analytical skills to solve multidisciplinary problems.
- You will acquire versatile training in disciplines such as design, materials, mechanics, electricity, electronics and the use of ICT applied to automotive engineering.
- You will master the computer tools used in design, simulation, validation and production management.
- You will go on placement at the sector’s leading companies.
- You will acquire an overview of the systems and components in vehicles that will allow you to carry out innovation and improvement projects.
- You will get to know the business world and its values, such as innovation, competitiveness, teamwork, communication and creativity.

### Professional opportunities

Automotive engineers may find employment in large assembly plants, the components industry, R&D centres, training centres, post-sales and commercialisation and even in the world of racing. Some of their most common roles are the following:

- Leading and managing projects.
- Conceptualising, designing, developing, analysing and maintaining automotive systems and components.
- Improving products, reengineering.
- Organising and controlling production in manufacturing plants.
- Quality control, Logistics.
- Training production and post-sales teams.
- Applying and complying with regulations in the automotive sector.
- Developing solutions to mobility problems.

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### BACHELOR’S DEGREE IN AUTOMOTIVE ENGINEERING

The automotive engineering sector is one of the most globalised and competitive and it continuously incorporates innovations and technical improvements in aspects such as safety, energy efficiency and environmental protection. It has a strong tradition and has become a strategic sector in Catalonia. Some of the world’s leading manufacturers are located here, as well as a substantial number of suppliers of components and services that, together, make up a significant proportion of exports. A demand for 100 engineers per year up to 2030 is foreseen in the automotive sector.

The bachelor’s degree of Automotive Engineering has 240 ECTS and is foreseen in the automotive sector. A demand for 100 engineers per year up to 2030 is foreseen in the automotive sector.

The bachelor's degree has the support of the Automotive Industry Cluster of Catalonia.

Part of the teaching is in English.

You will go on placement at the sector’s leading companies.

You can join Dynamics and participate in the Formula Student competition.
BACHELOR’S DEGREE IN AUTOMOTIVE ENGINEERING

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