

# Bachelor's degree in Electrical Engineering

## Barcelona East School of Engineering (EEBE)

The **bachelor's degree in Electrical Engineering** covers the technological fundamentals of the generation and distribution of electrical energy and the control and protection of electrical systems. You will acquire the skills needed to supervise and manage engineering projects related to electrical systems, high-, medium- and low-power installations, machine and industrial production line automation, and the generation and distribution of electrical energy. You will also become familiar with emerging fields such as electric traction and the development of renewable energies.

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### GENERAL DETAILS

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#### 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](#)

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### ADMISSION

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#### Places

80

#### 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](#).

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### DOUBLE-DEGREE AGREEMENTS

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With universities around the world

- Bachelor's degree in Electrical 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 Electrical 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 Electrical 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)

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## PROFESSIONAL OPPORTUNITIES

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### Professional opportunities

- Supervision and management of engineering projects related to the design, analysis, construction, verification and maintenance of systems and equipment for generating, transporting and distributing electrical energy.
- Analysis, design, testing and control of domestic and industrial electrical installations.
- Management of electrical power systems, installations and drives.
- Design, installation and maintenance of electromechanics, automation and industrial production lines.
- Energy and environmental management.
- Energy generation in wind and photovoltaic power systems.
- Drafting of technical, advisory and feasibility reports.
- Management, organisation, planning and quality control.
- Teaching and research.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### 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

- Terrassa · ESEIAAT · [Show degree](#)

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## CURRICULUM

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Subjects	ECTS credits	Type
<b>FIRST SEMESTER</b>		
Calculus	6	Compulsory
Chemistry	6	Compulsory
Graphic Expression	6	Compulsory
Informatics	6	Compulsory
Physics I: Fundamentals of Mechanics	6	Compulsory
<b>SECOND SEMESTER</b>		
Algebra and Multivariable Calculus	6	Compulsory

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
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
<b>THIRD SEMESTER</b>		
Electrical Systems	6	Compulsory
Fluid Mechanics	6	Compulsory
Industrial Control and Automation	6	Compulsory
Mechanical Systems	6	Compulsory
Statistics	6	Compulsory
<b>FOURTH SEMESTER</b>		
Business	6	Compulsory
Circuits and Signals	6	Compulsory
Electrical Machines I	6	Compulsory
Electronic Systems	6	Compulsory
Thermodynamics and Heat Transfer	6	Compulsory
<b>FIFTH SEMESTER</b>		
Electrical Machines II	6	Compulsory
Engineering Design	6	Compulsory
Hydraulic and Thermal Power Plants	6	Compulsory
Low and High Voltage Electrical Installations I	6	Compulsory
Power Electronics	6	Compulsory
<b>SIXTH SEMESTER</b>		
Control Techniques	6	Compulsory
Electric Drives	6	Compulsory
Electric Power Systems	6	Compulsory
Low and High Voltage Electrical Installations II	6	Compulsory
Power Plants and Renewable Energies	6	Compulsory
<b>SEVENTH SEMESTER</b>		
Additive Manufacturing 1	3	Optional
Additive Manufacturing 2	3	Optional
Advanced Computer-Aided Design	6	Optional
Advanced Control	6	Optional
Advanced Statistics and Applications in Engineering	6	Optional
Analysis of Electrical Power Systems	6	Optional
Applied Photonics	6	Optional
Artificial Intelligence for Engineering	6	Optional
Climate Change: Science, Energy, Economics, Politics and the Future	3	Optional

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
Communication in Technical English	9	Optional
Computational Engineering	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
Electrical Machines Design	6	Optional
Facilities Projects	6	Optional
Fire Engineering	6	Optional
Implementation of Automatic Control System	6	Optional
Industrial Automation and Communications	6	Optional
Industrial Equipments and Installations	6	Optional
Innovation Management	6	Optional
Leadership and Management	6	Optional
Mobile Devices Programming	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
Smart Grids	6	Optional
Technology and Sciences in Ancient Times: Egypt and Mesopotamia	6	Optional
Transport Phenomena	6	Optional
Wind Energy Generation	6	Optional
<b>EIGHTH SEMESTER</b>		
Bachelor's Thesis	24	Project