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.

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: €2,431 (€3,646 for non-EU residents). Consult the public fees system based on income (grants and payment options).

Official degree
Recorded in the Ministry of Education's degree register

ADMISSION

Places
90

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

- 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.

ORGANISATION

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
- Vilanova i la Geltrú · EPSEVG · Show degree

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Calculus	6	Compulsory
Chemistry	6	Compulsory
Graphic Expression	6	Compulsory
Informatics	6	Compulsory
Physics I: Fundamentals of Mechanics	6	Compulsory
SECOND SEMESTER		
Algebra and Multivariable Calculus	6	Compulsory
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
THIRD SEMESTER		
Electrical Systems	6	Compulsory
Fluid Mechanics	6	Compulsory
Industrial Control and Automation	6	Compulsory
Mechanical Systems	6	Compulsory
Statistics	6	Compulsory
FOURTH SEMESTER		

Subjects	ECTS credits	Type
Business	6	Compulsory
Circuits and Signals	6	Compulsory
Electrical Machines I	6	Compulsory
Electronic Systems	6	Compulsory
Thermodynamics and Heat Transfer	6	Compulsory
FIFTH SEMESTER		
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
SIXTH SEMESTER		
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
SEVENTH SEMESTER		
Actuators and Sensors for Mechatronics	6	Optional
Advanced Circuit Analysis. Signals and Systems	6	Optional
Advanced Computer-Aided Design	6	Optional
Advanced Control	6	Optional
Advanced Methods of Electrical Energy Conversion	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
Automatic Systems in Integrated Manufacturing	6	Optional
Climate Change: Science, Energy, Economics, Politics and the Future	3	Optional
Commercial Engineering	6	Optional
Communication in Technical English	9	Optional
Computational Engineering	6	Optional
Condition Monitoring in Power Grids and Power Quality	6	Optional
Control of Electrical Machines	6	Optional
Data Processing in Engineering	6	Optional
Design and Implementation of Electronics Prototypes	6	Optional
Design Validation	6	Optional
Design, Creativity & Innovation	6	Optional

Subjects	ECTS credits	Type
Distributed Supply Systems	6	Optional
Dynamic Systems and Simulations	6	Optional
Earthquake Engineering and Structural Dynamics	6	Optional
Electric Mobility	6	Optional
Electrical Machines Design	6	Optional
Electrical System Simulation	6	Optional
Electromagnetic Foundations of Electrical Engineering: Finite Elements Applications	6	Optional
Electronics System Technology for Control	6	Optional
Expertise Valuations and Authorizations	6	Optional
Facilities Projects	6	Optional
Fire Engineering	6	Optional
Games and Decisions	6	Optional
Green Functions and Linear Differential Equations: Diffusive Problems, Static Inverters	6	Optional
Implementation of Automatic Control System	6	Optional
Industrial Automation and Communications	6	Optional
Industrial Electronics for Energy Static Converters	6	Optional
Industrial Electronics Laboratory	6	Optional
Industrial Equipments and Installations	6	Optional
Industrial Measurement Systems	6	Optional
Innovation Management	6	Optional
Integration of Automatic Systems	6	Optional
Leadership and Management	6	Optional
Management Skills	6	Optional
Mechatronics	6	Optional
Microcontrollers in Process Automation	6	Optional
Mobile Devices Programming	6	Optional
Modelling and Simulation of Dynamical Systems	6	Optional
Numerical Simulation Applied to Engineering	3	Optional
Numerical Simulation Applied to Engineering	6	Optional
Physical Chemistry	6	Optional
Planning, Programming and Control Project	6	Optional
Plastic Materials Technology	6	Optional
Power Electronics Applications	6	Optional
Prevention of Occupational Hazards	6	Optional
Production Organisation	6	Compulsory
Programmable Devices for Control and Automation	6	Optional
Programming for Engineers	6	Optional

Subjects	ECTS credits	Type
Project Engineering & Management	6	Optional
Renewable Energy and Energy Planning	6	Optional
Renewable Integration in Electrical Grids	6	Optional
Resources Recovery and Circular Economy	6	Optional
Simulation and Control of Power Electronics Systems	6	Optional
Smart Grids	6	Optional
Sustainable Electric Energy Systems	6	Optional
Technical English for Engineers	6	Optional
Technology and Sciences in Ancient Times: Egypt and Mesopotamia	6	Optional
Telecommunications and Internet	6	Optional
Transport Phenomena	6	Optional
Value-Added Productivity with a PC	6	Optional
Wind Energy Generation	6	Optional
Work Placement Cfgs 1	3	Optional
Work Placement Cfgs 2	6	Optional
Work Placement Cfgs 3	9	Optional
Work Placement Cfgs 4	12	Optional
EIGHTH SEMESTER		
Bachelor's Thesis	24	Project