@font-face{ font-family:'Glyphicons Halflings'; src:url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.eot"); src: url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.eot?#iefix") format("embedded-opentype"), url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.woff2") format("woff2"), url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.woff") format("woff"), url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.ttf") format("truetype"), url("/content/assets/fonts/bootstrap/glyphicons-halflings-regular.svg#glyphicons_halflingsregular") format("svg") }

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

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 academic 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

Admission mark 2025-2026 academic year
9,032

Language of instruction

Check the language of instruction for each subject (and timetable) in the course sheet in the curriculum.

Information on language use in the classroom and students' language rights.

Fees and grants
Approximate fees per academic year: €1,061 (€1,800 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

ADMISSION

Places
80

Pre-enrolment code
31053

Places via a change of degree
5

Admission mark 2025-2026 academic year

9,032. Admission mark

Weighting. University entrance examinations (PAU)

Weighting. University entrance examinations (PAU)

Registration and enrolment

What are the requirements to enrol in a bachelor's degree course?

CFGS credit transfer

Consult the university studies search engine of the Universities Channel of the Generalitat de Catalunya

Legalisation of foreign documents

All documents issued in non-EU countries must be legalised and bear the corresponding apostille.

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		
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

Subjects	ECTS credits	Type
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
Electrical Power Systems	6	Compulsory
Low and High Voltage Electrical Installations II	6	Compulsory
Power Plants and Renewable Energies	6	Compulsory
SEVENTH SEMESTER		
Operations Management	6	Compulsory
Academic and Professional Communication for Engineering	6	Optional
Additive Manufacturing I	3	Optional
Additive Manufacturing II	3	Optional
Advanced Control	6	Optional
Analysis of Electrical Power Systems	6	Optional
Applied Photonics	6	Optional
Applied Sustainability in Engineering	6	Optional
Artificial Intelligence for Engineering	6	Optional
Climate Change: Science, Energy, Economics, Politics and the Future	3	Optional
Communication in Technical English	9	Optional
Computational Engineering	6	Optional
Data Engineering and Business Analytics	6	Optional
Design and Implementation of Electronic Prototypes	6	Optional
Design of Electrical Machines	6	Optional
Design Validation	6	Optional
Digital Microelectronic Design	6	Optional
Energy Management with Electronic Equipment	6	Optional
Engineering Project Management	6	Optional
Facilities Projects	6	Optional
Fire Engineering	6	Optional
Fundamentals of Automatic Learning	6	Optional
Fundamentals of Functional Materials	6	Optional
Further Computer-Aided Design	6	Optional
Further Statistics and Applications in Engineering	6	Optional
Implementation of Arduino-Based Acquisition Systems	6	Optional
Implementation of Automatic Control Systems	6	Optional
Industrial Automation and Communications	6	Optional

Subjects	ECTS credits	Type
Industrial Equipment and Installations	6	Optional
Innovation Management	6	Optional
Intelligent Robotics	6	Optional
Introduction to Sustainable Materials	6	Optional
Leadership and Management	6	Optional
Numerical Simulation for Engineering	6	Optional
Physical Chemistry	6	Optional
Professional Tools for Engineering	6	Optional
Programming for Engineers	6	Optional
Programming of Mobile Devices	6	Optional
Project Development I	6	Optional
Project Development II	6	Optional
Renewable Energy Technologies and Applications	6	Optional
Resource Recovery and Circular Economy	6	Optional
Smart Grids	6	Optional
Technology and Science in Ancient Times: Egypt and Mesopotamia	6	Optional
Transport Phenomena	6	Optional
Wind Electricity Generation	6	Optional
EIGHTH SEMESTER		
Bachelor's Thesis	24	Project

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.

DOUBLE-DEGREE AGREEMENTS

Double-degree pathways at the UPC

You have the possibility of complementing this bachelor's degree with a specific pathway towards a double degree by taking an additional number of credits from one of the other degrees taught at the School. Generally, this involves an additional year of study. To gain admission to a double degree of this kind you must have taken a minimum number of credits on one of the bachelor's degrees. The number of places is limited.

- Bachelor's degree in Electrical Engineering + Bachelor's degree in Energy Engineering

QUALITY ACCREDITATION

Check the degree's main quality indicators in the University Studies in Catalonia portal of the Catalan University Quality Assurance Agency. Find information on topics such as degree evaluation results, student satisfaction and graduate employment data.
Further information

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

This bachelor's degree is also taught at

- Terrassa · ESEIAAT · Show degree