Bachelor's degree in Energy Engineering

The **bachelor's degree in Energy Engineering** will gain a clear vision of the energy field, focusing on aspects such as efficiency, saving, management, generation, elements and the energy market. You will be trained in energy resources; energy storage; energy management; energy sector planning; energy integration; the generation, transport and distribution of energy; and the control of energy systems. You will learn to analyse the criteria of sustainability, general efficiency and professional ethics that enable individuals, businesses and institutions to implement energy saving policies. In addition to studying conventional energies, you will also gain in-depth knowledge of renewable energies such as wind, solar, thermal, photovoltaic, biomass, geothermal, microhydro, biogas, biofuel, hydrogen and fuel cells.

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: €1,107 (€2,253 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
70

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 generation, transport and distribution of energy.
- Supervision and management of energy efficiency and saving projects.
- Design of energy saving, sustainability and rationing policies.

- Engineering firms, companies that make intensive use of energy and companies that produce and resell energy.
- Public administration.
- Teaching and research.

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

Barcelona East School of Engineering (EEBE)

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
Electrical Energy Generation	6	Compulsory

Subjects	ECTS credits	Type
Electronic Systems	6	Compulsory
Energy Resources	6	Compulsory
Thermodynamics and Heat Transfer	6	Compulsory
FIFTH SEMESTER		
Efficiency and Energy Audits	6	Compulsory
Energy Fluid Transmission and Distribution	6	Compulsory
Energy Sector Regulation	6	Compulsory
Engineering Design	6	Compulsory
Thermal and Fluid Dynamic Power Generation	6	Compulsory
SIXTH SEMESTER		
Control of Energy Systems	6	Compulsory
Electrical Energy Transmission and Distribution	6	Compulsory
Energy Storage	6	Compulsory
Power Station Technology	6	Compulsory
Renewable Energies	6	Compulsory
SEVENTH SEMESTER		
Additive Manufacturing 1	3	Optional
Additive Manufacturing 2	3	Optional
Advanced Control	6	Optional
Analysis of Electrical Power Systems	6	Optional
Applied Photonics	6	Optional
Climate Change: Science, Energy, Economics, Politics and the Future	3	Optional
Communication in Technical English	9	Optional
Computational Engineering	6	Optional
Computational Fluid Mechanics and Heat Transfer	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
Energy Management with Electronic Equipment	6	Optional
Facilities Projects	6	Optional
Fire Engineering	6	Optional
Implementation of Applications Based on Arduino Platforms	6	Optional
Industrial Automation and Communications	6	Optional
Innovation Management	6	Optional
Integration and Management of Energy Systems	6	Compulsory
Leadership and Management	6	Optional
Management Skills	6	Optional

Subjects	ECTS credits	Type
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
Smart Grids	6	Optional
Static Energy Converters	6	Compulsory
Telecommunications and Internet	6	Optional
Transport Phenomena	6	Optional
Wind Energy Generation for Energy Engineering	6	Optional
EIGHTH SEMESTER		
Bachelor's Thesis	24	Project