Bachelor's degree in Electronic Engineering and Telecommunications

Today, practically all spheres of human activity require the support of electronics, including communications systems, multimedia services, industrial process control, energy management, the automobile industry, medicine, all of which depend on electronics and its ability to cut across disciplines. In addition, the current trend in clean electricity makes electronics more present than ever: from microchips to train engines, electronics is everywhere.

This bachelor's degree aims to cover the needs of companies and institutions in a wide range of sectors that require staff who are highly qualified in design and technological development in the field of electronics. It provides a solid grounding in the principles of electronics and mathematics and gives students the skills they need to work in a field whose future is beyond our imagination.

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 (€2,553 for non-EU residents). Consult the public fees system based on income (grants and payment options).

Location

Barcelona School of Telecommunications Engineering (ETSETB)

ADMISSION

Places

50

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

Graduates may find employment in the areas of ICT engineering. They will be equipped to supervise and carry out tasks related to the design, implementation and management of electronic systems in fields and sectors such as the following:

- Consumer electronics.

- Telecommunications.
- Microtechnology and nanotechnology.
- Automobile industry.
- Automatic control and robotics.
- Multimedia, image and sound.
- Energy and sustainability.
- Medicine and health.
- Bioengineering.
- Photonics and light technologies.
- Aeronautics and aerospace industry.
- R&D centres.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

Course structure

The 240 ECTS credits in the syllabus are organized into 4 academic years. Each course has 60 ECTS, divided into two semester periods of 30 ECTS. One ECTS credit is considered to correspond to a student's dedication of 25 hours.

- Basic training: 66 ECTS
- Compulsory training: 138 ECTS
- Elective training, internships and university extension activities: 18 ECTS
- Final Degree Project: 18 ECTS

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 School of Telecommunications Engineering (ETSETB)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Algorithms and Programming	6	Compulsory
Calculus	6	Compulsory
Components and Circuits	6	Compulsory
Introduction to Mathematics	2	Optional
Linear Algebra	6	Compulsory
Physics	6	Compulsory
SECOND SEMESTER		
Circuit Analysis	6	Compulsory
Differential Equations and Transforms	6	Compulsory
Electromagnetism	6	Compulsory
Programming and Data Structures	6	Compulsory
Vector Calculus	6	Compulsory
THIRD SEMESTER		

Subjects	ECTS credits	Type
A Practical Introduction to Matlab	2	Optional
Administrating Linux Systems	2	Optional
Applied Electromagnetism and Photonics	6	Compulsory
Circuit Simulation and Analysis Using PSpice	2	Optional
Cooperation Project with Wifi Technologies	2	Optional
Create Your Future: Just a Job or Your True Passion	2	Optional
Digital Design	6	Compulsory
Electronic Devices	6	Compulsory
Financial Engineering for Economic Planning of Investments	2	Optional
Leadership and Professional Development Techniques in Engineering	2	Optional
Linear Algebra, Linear Codes and Secret-Sharing Schemes	2	Optional
Machine Learning	2	Optional
Photovoltaic Solar Energy	2	Optional
Pigment Identification with Raman Spectroscopy	2	Optional
Probability and Stochastic Processes	6	Compulsory
Renewable Energy	2	Optional
Signals and Systems	6	Compulsory
FOURTH SEMESTER		
Analog Circuits	6	Compulsory
Business and Project Management	6	Compulsory
Embedded Systems	6	Compulsory
Introduction to High Frequency Circuits	6	Compulsory
Signal Processing	6	Compulsory
FIFTH SEMESTER		
Configurable Digital Systems	6	Compulsory
Control Systems	6	Compulsory
High Frequency Circuits	6	Compulsory
Introduction to Deep Learning	2	Optional
Machine Learning: from Theory to Practice	2	Optional
Materials Science and Engineering	6	Compulsory
Measurement Systems	6	Compulsory
Problem Solving with Artificial Intelligence: a Practical Approach	2	Optional
Quantum Technologies for Cybersecurity: Networks and Systems	2	Optional
SIXTH SEMESTER		
Automotive Electronic Systems	2	Optional
Electric Power Processing	6	Compulsory
Electronic Technology	6	Compulsory
Internet of Things	6	Compulsory

Subjects	ECTS credits	Type
Real-Time Systems	6	Compulsory
Techniques for Entrepreneurship	6	Compulsory
SEVENTH SEMESTER		
Big Data and R Programming	6	Optional
Ethics in Science and Engineering	6	Optional
Hardware Information Processing Systems	6	Compulsory
Information Security and Privacy	6	Optional
Internet Management	6	Optional
Matlab and Its Applications in Engineering	6	Optional
Microelectronic Design	6	Compulsory
Photovoltaic Devices	6	Optional
Quantum Physics	6	Optional
Reinforcement Learning and Deep Learning	6	Optional
Sensors, Actuators and Microcontrollers in Mobile Robots	6	Optional
Smart Electronics	6	Optional
Space Telecommunications	6	Optional
System Integration	12	Compulsory
EIGHTH SEMESTER		
Bachelor's Thesis	18	Project