Bachelor's degree in Industrial Electronics and Automatic Control Engineering

TERRASSA SCHOOL OF INDUSTRIAL, AEROSPACE AND AUDIOVISUAL ENGINEERING (ESEIAAT)

On the **bachelor's degree in Industrial Electronics and Automatic Control Engineering**, you will acquire the knowledge needed to supervise and manage engineering projects in the fields of industrial electronics and automatic control: design and development of analogue, digital and power electronic systems and industrial control and automation systems. You will receive multidisciplinary training in the fields of analogue, digital and power electronics, systems modelling and simulation, automatic regulation and control techniques and their application in industrial automation, and the principles and applications of robotic systems, industrial informatics and communications.

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 2026-2027 academic year
9,374

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
Terrassa School of Industrial, Aerospace and Audiovisual Engineering (ESEIAAT)

Official degree
Recorded in the Ministry of Science, Innovation and Universities

ADMISSION

New intake places
270

Pre-enrolment code
31015

New intake places via a change of degree
1

Admission mark 2026-2027 academic year
9,374. Admission mark

Weighting. University entrance examinations (PAU)

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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		
Chemistry	6	Compulsory
Engineering Presentation	6	Compulsory
Environmental Technologies and Sustainability	6	Compulsory
Mathematical Methods I	6	Compulsory
Physics I	6	Compulsory
SECOND SEMESTER		
Economics and Business Administration	6	Compulsory
Fundamentals of Informatics	6	Compulsory
Materials Science and Technology	6	Compulsory
Mathematical Methods II	6	Compulsory
Physics II	6	Compulsory
THIRD SEMESTER		
Electrical Systems	6	Compulsory
Fluid Mechanics	6	Compulsory
Mathematical Methods III	6	Compulsory
Mechanical Systems	6	Compulsory
Operations Management	6	Compulsory
FOURTH SEMESTER		
Electronic Systems	6	Compulsory
Industrial Automation and Control	6	Compulsory
Industrial Informatics	6	Compulsory
Probability and Statistics	6	Compulsory
Thermal Engineering	6	Compulsory
Advanced Control Systems	3	Optional
UAV Research and Development	3	Optional
UAV Research and Development Project	3	Optional
FIFTH SEMESTER		
Analogue Electronics	6	Compulsory
Digital Electronics	6	Compulsory

Subjects	ECTS credits	Type
Industrial Automation	6	Compulsory
Modelling and Analysis of Dynamic Systems I	4.5	Compulsory
Power Electronics I	4.5	Compulsory
SIXTH SEMESTER		
Automated Manufacture and Industrial Robotics	6	Compulsory
Control Engineering	6	Compulsory
Modelling and Analysis of Dynamic Systems II	4.5	Compulsory
Power Electronics II	4.5	Compulsory
Programmable Devices	6	Compulsory
Academic Writing Skills for Engineering	3	Optional
Advanced Object-Oriented Programming	3	Optional
Applied UAV Control	3	Optional
Autonomous Vehicle Programming	3	Optional
Big Data and Smart Grids	6	Optional
Big Data Tools and Applications	3	Optional
Characterisation Techniques for Metal Alloys	3	Optional
Creative Lab	6	Optional
Critical Thinking for 3D Printing	6	Optional
Decision Criteria: the Engineer as Employee or the Engineer as Entrepreneur	3	Optional
Electromobility and Electrical Aircraft Systems	3	Optional
Embedded System Programming	3	Optional
Energy Efficiency Systems	3	Optional
Energy Storage and Conversion	3	Optional
Experimental Design	3	Optional
Generative UAV Design	6	Optional
Highly Automated Production Systems	3	Optional
Hospital Engineering	6	Optional
Information and Communication Technologies	3	Optional
Introduction to Big Data	3	Optional
Introduction to Cubesats	3	Optional
Introduction to Dynamical Systems and Ergodic Theory	3	Optional
Introduction to Forensic Practice for Technical Dispute Resolution	3	Optional
Introduction to Object-Oriented Programming	3	Optional
Introduction to Reverse Engineering	3	Optional
Leadership and Professional Development in Engineering	3	Optional
Lightweight Materials for Engineering Applications	3	Optional
Mathematical Models in Engineering	3	Optional
Mathematics and Informatics Engineering	3	Optional

Subjects	ECTS credits	Type
Mobile Programming	6	Optional
Motorbikes. Design and Secrets	3	Optional
Photovoltaic System Design	6	Optional
Professional Communication for Engineers Through Virtual Reality	3	Optional
Real-Time Control System Programming	6	Optional
Real-Time Programming and Databases	3	Optional
Robotics and Automation	3	Optional
Robotics Safety and Automation for Industry 4.0	3	Optional
Surface Chemistry for Industrial Application Design	3	Optional
Technology, Society and Globalisation. the Sustainability Challenge in the 21st Century	6	Optional
Validating and Communicating Innovative Ideas	6	Optional
Vibroacoustics	3	Optional
Web Applications	3	Optional
SEVENTH SEMESTER		
Electronic Instrumentation	6	Compulsory
Project Methodology and Orientation	6	Compulsory
Advanced Robotics and Highly Automated Production Systems	6	Optional
Android Mobile Programming	6	Optional
Applications and Control of Power Electronic Systems	6	Optional
Complementary Programming	6	Optional
Control and Guidance of Mobile Robots	6	Optional
Introduction to Advanced Control Systems	6	Optional
Introduction to Industrial Paper and Graphics Technologies	6	Optional
Modelling, Complexity and Sustainability	6	Optional
Operation and Control of Electric Vehicles	6	Optional
Work Placement	12	Optional
EIGHTH SEMESTER		
Agrivoltaics: Photovoltaic Solar Energy for Sustainable Development	3	Optional
Air Navigation, Cartography, and Cosmography	3	Optional
Application of Python/Matlab/C++ to Thermal, Mechanical and Aeronautical Engineering Problems	3	Optional
Applied Research Methods in Engineering Science	3	Optional
Artificial Intelligence for UAV Video Object Recognition	3	Optional
Artificial Intelligence for Video and Audio Generation	3	Optional
Basic Robotics	6	Optional
Complex Networks	6	Optional
Complex Systems in Engineering	3	Optional
Digitalisation for Energy Systems	3	Optional
Electrical Project Design with Eplan	3	Optional

Subjects	ECTS credits	Type
Electronic Systems for Renewable Energies and Energy Efficiency Project	6	Optional
Experimental Methods for New and Sustainable Materials	3	Optional
Finite Element Methods for Engineering	6	Optional
Fundamentals of R for Engineers	3	Optional
Fundamentals of Rams Engineering in Aerospace Product Certification	3	Optional
Hydraulic Hybrid Machines	3	Optional
International Engineering Communication Through Immersive Technologies	3	Optional
Introduction to UAV Flight	3	Optional
Life Cycle Assessment	3	Optional
Modern Industrial Control	3	Optional
Photography for Science and Technology	3	Optional
Photonics. Optics Applied to Engineering	6	Optional
Planning, Simulation and Supervision of Industrial Processes	6	Optional
Professional Communication for Engineers Through Virtual Reality II	3	Optional
R&D in Engineering	3	Optional
Smart Energy Systems in High-Performance Building	3	Optional
Sports Engineering	3	Optional
Supervision and Predictive Maintenance	3	Optional
Technological Projects I	6	Optional
Technological Projects II	6	Optional
The Future of Hydrogen: Technologies and Applications	3	Optional
Thermal Analysis Techniques for Engineering Materials	3	Optional
Bachelor's Thesis	24	Project

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Drafting and supervision of projects involving automation and control installations and electronic drive regulation.
- Design, installation and maintenance of electronic control, power and instrumentation systems.
- Design and development of industrial informatics and process monitoring systems.
- Design, management and maintenance of industrial equipment and installations.
- 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 Industrial Electronics and Automatic Control Engineering / Bachelor’s degree in Mechanical Engineering
- Bachelor's degree in Industrial Electronics and Automatic Control Engineering / Bachelor’s degree in Electrical Engineering

With other universities or centers of higher education in Catalonia

- Bachelor's degree in Industrial Electronics and Automatic Control Engineering / Master's degree in Industrial Engineering / Degree in Business Administration and Management (UOC).

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

ACADEMIC ORGANISATION

Academic calendar

General academic calendar for bachelor's, master's and doctoral degrees

Academic regulations

Academic regulations for bachelor's degree courses at the Universitat Politècnica de Catalunya (UPC).

Language certification and credit recognition

Queries about language courses and certification

This bachelor's degree is also taught at

- Barcelona · EEBE · Show degree
- Manresa · EPSEM · Show degree
- Vilanova i la Geltrú · EPSEVG · Show degree