

Bachelor's degree in Industrial Technology Engineering + master's degree in Industrial Engineering. Sequential academic programme (PARS): Industrial Engineer Terrassa School of Industrial, Aerospace and Audiovisual Engineering (ESEIAAT)

The **bachelor's degree in Industrial Technology Engineering** provides knowledge of the range of industrial technologies and offers a multidisciplinary, unifying view of the field of industrial engineering. You will be trained in basic scientific and technological disciplines that will equip you to learn about new methods and theories and gain in-depth knowledge of industrial fields, including technological and business aspects such as project planning, supervision and management, whilst observing social and environmental requirements. Upon completion of your studies, you will have developed the versatility to adapt to changing working environments and to future technological developments that will improve products and processes in the sector.

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

[Terrassa School of Industrial, Aerospace and Audiovisual Engineering \(ESEIAAT\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

Places

180

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](#).

DOUBLE-DEGREE AGREEMENTS

With other universities or centers of higher education in Catalonia

- Bachelor's degree in Industrial Technology Engineering + Master's degree in Industrial Engineering + Bachelor's degree in Business Administration and Management (UOC)
- Bachelor's degree in Industrial Technology Engineering + Master's degree in Industrial Engineering + Bachelor's degree in Economics (UOC)

Further information on [this website](#)

Within the framework of the courses offered by the Interdisciplinary Higher Education Centre (CFIS)

You can also take an interdisciplinary double degree coordinated by the CFIS at two UPC schools.

Further information on the [CFIS website](#)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Supervision and management of projects, facilities, plants, businesses and technology centres in a range of industrial sectors such as energy; iron and steel; metallurgy; chemicals; robotics; the automotive and rail industries; metal, mechanical and electrical construction; and smart materials, nanotechnology and bioengineering
- Design, calculation and design of products, processes, facilities and equipment.
- Strategic planning, quality management and environmental management.
- Research, development and innovation in products, processes and methods.

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](#)

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

This bachelor's degree is also taught at

- Barcelona · ETSEIB · [Show degree](#)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Algebra	6	Compulsory
Calculus I	6	Compulsory
Chemistry I	6	Compulsory
Graphic Expression I	6	Compulsory
Physics I	6	Compulsory

Subjects	ECTS credits	Type
SECOND SEMESTER		
Calculus II	6	Compulsory
Chemistry II	6	Compulsory
Economics and Business	6	Compulsory
Fundamentals of Programming	6	Compulsory
Physics II	6	Compulsory
THIRD SEMESTER		
Advanced Informatics	4.5	Compulsory
Advanced Physics	6	Compulsory
Differential Equations	6	Compulsory
Graphic Expression II	3	Compulsory
Materials Science	6	Compulsory
Mechanics	4.5	Compulsory
FOURTH SEMESTER		
Automatic Control	4.5	Compulsory
Circuit Theory	6	Compulsory
Continuum Mechanics and Strength of Materials	7.5	Compulsory
Statistics	6	Compulsory
Thermodynamics	6	Compulsory
FIFTH SEMESTER		
Electronics	4.5	Compulsory
Electrotechnics and Electrical Machines	7.5	Compulsory
Fluid Mechanics	4.5	Compulsory
Machine and Mechanism Theory	6	Compulsory
Numerical and Quantitative Methods	7.5	Compulsory
SIXTH SEMESTER		
Advanced Fluid Mechanics	3	Optional
Air Pollution and Treatment Technologies	6	Optional
Big Data Tools and Applications	3	Optional
Bim for Engineers	3	Optional
Creative Lab	6	Optional
Embedded Systems Programming	3	Optional
Experimental Designs and Quality Control	4.5	Compulsory
Heat Technology	6	Compulsory
High Performance Computing for Aerospace Engineering	3	Optional
Hospital Engineering	6	Optional
Introduction to Big Data	3	Optional
Introduction to Biomedical Engineering	3	Optional

Subjects	ECTS credits	Type
Introduction to Cubesats	3	Optional
Introduction to Dynamical Systems and Ergodic Theory	3	Optional
Introduction to Rockets	3	Optional
Key Factors for the Professional Success	3	Optional
Leadership and Professional Development in Engineering	3	Optional
Lean Construction and Circular Economy Basics	3	Optional
Manufacturing Organization	6	Compulsory
Materials Technology	4.5	Compulsory
Mobile Programming	6	Optional
Polymers in Engineering	6	Optional
Power Converters	4.5	Compulsory
Systems Modelling and Simulation	4.5	Compulsory
Uav Generative Design	6	Optional
Uav Research & Development	3	Optional
Uav Research & Development Project	3	Optional
SEVENTH SEMESTER		
Business Start-Up and Organisation	3	Compulsory
Digital Electronics	6	Compulsory
Environmental Science and Technology	6	Compulsory
Fluid Technology	4.5	Compulsory
Projects	6	Compulsory
Structural Theory and Industrial Construction	4.5	Compulsory
EIGHTH SEMESTER		
Advanced Control Systems	3	Optional
Advanced Programming Oriented Towards Goals	3	Optional
Agrivoltaics: Photovoltaic Solar Energy for Sustainable Development	3	Optional
Alternative Propulsion Vehicles	3	Optional
Analysis of Thermal and Fluid Dynamics Issues in Industrial And/Or Aeronautical Systems and Equipment	3	Optional
Application of Matlab-Octave to Thermal Engineering Problems	3	Optional
Application of Open-Source Cfd to Engineering Problems	3	Optional
Application of Python/Matlab/C++ to Thermal Engineering Mechanical and Aeronautical Problems	3	Optional
Applied Research Methods in Engineering Science	3	Optional
Applied UAV Control	3	Optional
Automobile Electronics	3	Optional
Autonomous Vehicle Programming	3	Optional
Basic Robotics	6	Optional
BIM Management	3	Optional

Subjects	ECTS credits	Type
Building Energy Certification	3	Optional
Characterization Techniques for Metallic Alloys	3	Optional
Control and Guidance of Mobile Robots	6	Optional
Creative Programming with Processing	3	Optional
Critical Thinking for 3D Printing	6	Optional
Decision Criteria - Engineer as Employee or Engineer as Entrepreneur	3	Optional
Digitalization Applied to Energy Systems	3	Optional
Electrical Project Design with Eplan	3	Optional
Electromobility and Electrical Aircraft Systems	3	Optional
Energy Efficiency Systems	3	Optional
Energy Storage and Conversion Application	3	Optional
Engines and Powertrains	3	Optional
Experimental Labs in Fluids	3	Optional
Finite Elements in Structural Analysis	3	Optional
Fluid Dynamic Technologies in Vehicles	3	Optional
Fluid Mechanics II	3	Optional
Fundamentals of Rams Engineering in the Certification of Aerospace Products	3	Optional
Fundamentals of Robotics	3	Optional
Greening the Built Environment	3	Optional
Highly Automated Production Systems	3	Optional
Hydraulic Hybrid Machines	3	Optional
Hydrogen's Future: Technologies and Applications	3	Optional
Industrial Organic Chemistry	3	Optional
Information and Communication Technology	3	Optional
Initiation to Paper and Graphic Industrial Technologies	6	Optional
Innovation and Creativity: Tools for Engineering	3	Optional
Introduction to Forensic Expert for Technique Dispute Resolution	3	Optional
Introduction to Lean Construction	3	Optional
Introduction to Object-Oriented Programming	3	Optional
Introduction to Reverse Engineering	3	Optional
Introduction to Robotics and Automation	3	Optional
Introduction to Sailplanes	3	Optional
Knowledge of Industrial Companies and Professional Practice	3	Optional
Lasers and Photonic Technologies for Engineering	3	Optional
Learning From Mechanical Failure in Engineering	3	Optional
Life Cycle Assessment	3	Optional
Lightweight Materials for Engineering Applications	3	Optional
Lignocellulosic Biorefineries	3	Optional

Subjects	ECTS credits	Type
Materials Characterization and Surface Engineering	3	Optional
Materials Chemistry	3	Optional
Materials Engineering: Learning From Disasters	3	Optional
Mathematical Models in Engineering	3	Optional
Mathematics and Computing Engineering	3	Optional
Mechanical Design and Manufacturing	3	Optional
Mechanics of Robotic Manipulation	3	Optional
Modelisation, Complexity and Sustainability	6	Optional
Motorbikes Design and Secrets	3	Optional
Nonlinear Systems, Chaos and Control in Engineering	3	Optional
Numerical Methods for Engineers	6	Optional
Optimization of Industrial Processes	3	Optional
Planning, Simulation and Supervision of Industrial Processes	6	Optional
Plug-In Hybrid Electric Vehicles. Concept, Design and Project of Electric Propulsion Systems	3	Optional
Professional Communication for Engineers Through Virtual Reality	3	Optional
Professional Communication for Engineers Through Virtual Reality II	3	Optional
Programming of Mobiles Android	6	Optional
R&D in Engineering	3	Optional
Real-Time Programming and Database Systems	3	Optional
Robotics and Automation	3	Optional
Safety Robotics and Automation for Industry 4.0	3	Optional
Spoken Academic and Professional Skills	3	Optional
Sports Engineering	3	Optional
Surface Chemistry for Industrial Applications Design	3	Optional
Sustainable Manufacturing Technologies	3	Optional
Technological Projects I	6	Optional
Technological Projects II	6	Optional
Technology, Society and Globalization: the Sustainability Challenge in the XXIth Century	6	Optional
Telemetry and Smart Electronics Projects	3	Optional
Thermal Analysis Techniques Applied to Engineering Materials	3	Optional
Thermodynamics of Materials	3	Optional
UAV Introduction to Drone Flight (Uas)	3	Optional
Unit Operation in Engineering	3	Optional
Urban and Regional Planning	3	Optional
Validating and Communicating Innovative Ideas	6	Optional
Vehicle Dynamics	3	Optional
Vibroacoustics	3	Optional
Web Applications	3	Optional

Subjects	ECTS credits	Type
Wind Turbines Design	3	Optional
Written Academic Skills for Engineering	3	Optional
Bachelor's Thesis	12	Project

August 2024. [UPC](#). Universitat Politècnica de Catalunya · BarcelonaTech