Bachelor's degree in Aerospace Vehicle Engineering

The **bachelor's degree in Aerospace Vehicle Engineering** provides solid multidisciplinary training in aeronautical engineering, with an emphasis on aspects specifically related to aircraft and space vehicles, including their design, construction, operation and maintenance and the infrastructure needed for them to operate.

On the degree, you will acquire the versatility to adapt to new situations and assimilate future technological developments in the aerospace industry.

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

Timetables
The degree is taught in the mornings. Subjects may be repeated the following semester in the afternoons.

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
60

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 Catalan universities

- Bachelor's degree in Aerospace Vehicle Engineering + Master's degree in Aeronautical Engineering + Bachelor's degree in Business Administration and Management (UOC)

- Bachelor's degree in Aerospace Vehicle Engineering + Master's degree in Aeronautical Engineering + Bachelor's degree in Economics (UOC)

Further information on this website

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Design, planning, production and maintenance of aircraft, aerospace vehicles and aeronautical engineering works.
- Planning, construction and management of airport infrastructure.
- Control and supervision of ground facilities, airport terminals, runways, signalling systems and structures used in air navigation.
- Testing and certification of aerospace vehicles, aerospace propulsion systems, aerospace materials, airport and air navigation infrastructure, and systems for managing airspace, air traffic and air transport.
- Technical supervision, surveying, drafting of reports, and technical advice in areas related to aeronautical engineering.

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)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Algebra	6	Compulsory
Business	6	Compulsory
Calculus I	6	Compulsory
Fundamentals of Programming	6	Compulsory
Physics I	6	Compulsory
SECOND SEMESTER		
Airspace, Air Navigation and Infrastructure	4.5	Compulsory
Calculus II	6	Compulsory
Chemistry	6	Compulsory
Graphic Expression	7.5	Compulsory
Physics II	6	Compulsory
THIRD SEMESTER		
Aerospace Vehicles	6	Compulsory
Further Mathematics	6	Compulsory

Subjects	ECTS credits	Type
Physics III	6	Compulsory
Statistics	6	Compulsory
Thermodynamics	6	Compulsory
FOURTH SEMESTER		
Electrical Circuits	6	Compulsory
Fluid Mechanics	7.5	Compulsory
Materials Science	7.5	Compulsory
Mechanics	4.5	Compulsory
Propulsion Systems	4.5	Compulsory
FIFTH SEMESTER		
Aerodynamics	6	Compulsory
Automatic Control	4.5	Compulsory
Electronic Circuits	6	Compulsory
Mechanical Systems	6	Compulsory
Structural Theory	7.5	Compulsory
SIXTH SEMESTER		
Advanced Control Systems	3	Optional
Advanced Fluid Mechanics	3	Optional
Advanced Programming Oriented Towards Goals	3	Optional
Aerospace Structures	7.5	Compulsory
Air Pollution and Treatment Technologies	6	Optional
Airport Process Rethinking	3	Optional
An Introduction to Space Systems	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
Applied UAV Control	3	Optional
Autonomous Vehicle Programming	3	Optional
Aviation Meteorology	3	Optional
Basic Robotics	6	Optional
Big Data Tools and Applications	3	Optional
Bim for Engineers	3	Optional
Building Energy Certification	3	Optional
Characterization Techniques for Metallic Alloys	3	Optional
Control and Guidance of Mobile Robots	6	Optional
Creative Lab	6	Optional
Creative Programming with Processing	3	Optional

Subjects	ECTS credits	Type
Critical Thinking for 3D Printing	6	Optional
Decision Criteria - Engineer as Employee or Engineer as Entrepreneur	3	Optional
Design, Build and Test Unmanned Aircraft	3	Optional
Electromobility and Electrical Aircraft Systems	3	Optional
Embedded Systems Programming	3	Optional
Energy Efficiency Systems	3	Optional
Energy Storage and Conversion Application	3	Optional
Experimental Aerodynamics	3	Optional
Experimental Design	3	Optional
Experimental Labs in Fluids	3	Optional
Finite Elements in Structural Analysis	3	Optional
Flight Mechanics	6	Compulsory
Flight Simulation for Aeronautical Engineering	3	Optional
Fluid Mechanics II	3	Optional
Fundamentals of Cubesat Mission Design	3	Optional
Fundamentals of Robotics	3	Optional
Gas Dynamics and Heat and Mass Transfer	6	Compulsory
Greening the Built Environment	3	Optional
High Performance Computing for Aerospace Engineering	3	Optional
Highly Automated Production Systems	3	Optional
Hospital Engineering	6	Optional
Industrial Organic Chemistry	3	Optional
Information and Communication Technology	3	Optional
Initiation to Paper and Graphic Industrial Tecnologies	6	Optional
Innovation and Creativity: Tools for Engineering	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 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 Rockets	3	Optional
Introduction to Sailplanes	3	Optional
Key Factors for the Professional Success	3	Optional
Knowledge of Aerospace Companies and Professional Practice	3	Optional
Lasers and Photonic Technologies for Engineering	3	Optional
Leadership and Professional Development in Engineering	3	Optional

Subjects	ECTS credits	Type
Lean Construction and Circular Economy Basics	3	Optional
Learning From Mechanical Failure in Engineering	3	Optional
Lightweight Materials for Engineering Applications	3	Optional
Lignocellulosic Biorefineries	3	Optional
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
Mechanics of Robotic Manipulation	3	Optional
Mobile Programming	6	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
Numerical Tools in Machine Learning for Aeronautical Engineering	3	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
Polymers in Engineering	6	Optional
Professional Communication for Engineers Through Virtual Reality	3	Optional
Programming of Mobiles Android	6	Optional
Real-Time Programming and Database Systems	3	Optional
Robotic Exploration of the Solar System	3	Optional
Robotics and Automation	3	Optional
Safety Robotics and Automation for Industry 4.0	3	Optional
Spoken Academic and Professional Skills	3	Optional
Surface Chemistry for Industrial Applications Design	3	Optional
Sustainable Manufacturing Technologies	3	Optional
Systems and Instruments	4.5	Compulsory
Technology, Society and Globalization: the Sustainability Challenge in the XXIth Century	6	Optional
Telemetry and Smart Electronics Projects	3	Optional
Thermodynamics of Materials	3	Optional
Towards a New Cockpit Generation Commercial Aircraft	3	Optional
Turbulence in Aerospace Science and Engineering	3	Optional
Uav Fundamentals & Operations	3	Optional
Uav Generative Design	6	Optional
Uav Guidance & Autonomous Control	3	Optional

Subjects	ECTS credits	Type
Uav Hardware & Programming	3	Optional
Uav Research & Development	3	Optional
Uav Research & Development Project	3	Optional
Uav Sensors & Applications	3	Optional
Unit Operation in Engineering	3	Optional
Validating and Communicating Innovative Ideas	6	Optional
Vibroacoustics	3	Optional
Web Applications	3	Optional
Written Academic Skills for Engineering	3	Optional
SEVENTH SEMESTER		
Aeroplane Design	4.5	Compulsory
Helicopter and Aircraft Design	4.5	Compulsory
Hydraulic Systems	4.5	Compulsory
Manufacturing Technology and Maintenance	4.5	Compulsory
Projects	6	Compulsory
EIGHTH SEMESTER		
Agrivoltaics: Photovoltaic Solar Energy for Sustainable Development	3	Optional
Alternative Propulsion Vehicles	3	Optional
Automobile Electronics	3	Optional
BIM Management	3	Optional
Digitalization Applied to Energy Systems	3	Optional
Electrical Project Design with Eplan	3	Optional
Engines and Powertrains	3	Optional
Fluid Dynamic Technologies in Vehicles	3	Optional
Hydrogen’S Future: Technologies and Applications	3	Optional
Introduction to Robotics and Automation	3	Optional
Mechanical Design and Manufacturing	3	Optional
Numerical Optimization with Applications in Machine Learning and Aeronautical Engineering	3	Optional
Professional Communication for Engineers Through Virtual Reality II	3	Optional
Technological Projects I	6	Optional
Technological Projects II	6	Optional
Vehicle Dynamics	3	Optional
Wind Turbines Design	3	Optional
Bachelor's Thesis	24	Project