Bachelor's degree in Aerospace Systems Engineering

The bachelor's degree in **Aerospace Systems Engineering** offers multidisciplinary training in aerospace systems engineering. You will acquire extensive knowledge of aerospace science and technology, particularly airport and air navigation infrastructure and air transport and air traffic management systems. You will go on to become a professional who is able to integrate into teams working on aerospace and consultancy projects.

Major in Air Navigation
You will specialise in avionics and the communication, navigation and surveillance systems that are necessary for air transport and traffic. You will acquire technical knowledge of navigability; communication, geolocation and observation satellites; meteorology; electronic instrumentation; and flight control systems. You will learn to apply this knowledge to flight route planning, airspace management and the implementation, development, design and maintenance of communication, navigation and surveillance systems.

Major in Airports
You will specialise in the design, development, maintenance and management of airport and aviation-support infrastructure. You will gain a solid grounding in air transport and maintenance of runways, hangars, terminal and service buildings, control towers, and passenger and cargo access ways, as well as studying airport construction, maintenance and management. You will also learn how to apply the technical skills you develop in relation to geotechnical engineering, electrical and communications installations, structures, building construction and infrastructure for air navigation, aerodromes, heliports and altiports.

Majors

- Air Navigation
- Airports

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
Castelldefels School of Telecommunications and Aerospace Engineering (EETAC)

Official degree
Recorded in the Ministry of Education's degree register

ADMISSION

Places

120

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

- Airlines and companies that play a role in air navigation and airport management.
- National and international civil aviation bodies.
- SMEs in the aeronautics sector.
- Research and development of innovative techniques and solutions for the aerospace sector. Aerospace organisations and agencies.
- Coordination of projects (feasibility studies, master plans, preliminary and detailed designs) and studies for the construction, exploitation, operation and maintenance of aircraft and aeronautical infrastructure.
- Airport management (management of airports, aerodromes, heliports, operations management, ground handling, operational security, etc.) and management of the impact airports have on their surroundings (minimisation of noise and pollution).
- Testing and certification of 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 technical aeronautical engineering.
- Technical and economic consulting.
- Management of aeronautical companies.
- 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

Castelldefels School of Telecommunications and Aerospace Engineering (EETAC)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Algebra and Geometry	6	Compulsory
Business	6	Compulsory
Calculus (Aeronautical Engineering)	6	Compulsory

Subjects	ECTS credits	Type
Chemistry	6	Compulsory
Fundamentals of Physics	6	Compulsory
SECOND SEMESTER		
Aerospace Technology and Air Transport	6	Compulsory
Further Mathematics	6	Compulsory
Graphic Expression	6	Compulsory
Informatics I	6	Compulsory
Mechanics	6	Compulsory
THIRD SEMESTER		
Air Transport Infrastructure	7.5	Compulsory
Further Mathematics 2	7.5	Compulsory
Informatics II	4.5	Compulsory
Linear Systems	4.5	Compulsory
Thermodynamics	6	Compulsory
FOURTH SEMESTER		
Airport Engineering	6	Compulsory
Electricity	4.5	Compulsory
Flight Mechanics	3	Compulsory
Fluid Mechanics	7.5	Compulsory
Materials Science and Technology	6	Compulsory
Sustainability of Aerospace Engineering	3	Compulsory
FIFTH SEMESTER		
Aerodynamics	4.5	Compulsory
Aeronautical Communications 1	6	Optional
Aeronautical Communications 1	6	Compulsory
Airport Communications	6	Optional
Airport Communications	6	Compulsory
Electronics	6	Compulsory
Meteorology	3	Compulsory
Models for Air Traffic Management	6	Compulsory
Structures and Strength of Materials	4.5	Compulsory
SIXTH SEMESTER		
Aeronautical Communications 2	6	Optional
Aeronautical Communications 2	6	Compulsory
Air Navigation, Cartography and Cosmography	6	Optional
Air Navigation, Cartography and Cosmography	6	Compulsory
Air Operations	6	Optional
Air Operations	6	Compulsory

Subjects	ECTS credits	Type
Airport Planning and Processes	6	Optional
Airport Planning and Processes	6	Compulsory
Avionics	7.5	Optional
Avionics	7.5	Compulsory
Communications Installations	7.5	Optional
Communications Installations	7.5	Compulsory
Control and Guidance	4.5	Optional
Control and Guidance	4.5	Compulsory
Electrical Installations	6	Optional
Electrical Installations	6	Compulsory
Geotechnics	4.5	Optional
Geotechnics	4.5	Compulsory
Structural Theory	6	Optional
Structural Theory	6	Compulsory
SEVENTH SEMESTER		
Adaptive Control and Processing	3	Optional
Aeronautical Propulsion	6	Optional
Air Conditioning and Installations in Aircraft and Airport Systems	6	Optional
Aircraft Communication Buses	3	Optional
Aircrafts: Communication Buses	6	Optional
Airlines: Transport, Management and Ethics	3	Optional
Airport Buildings	6	Optional
Airport Buildings	6	Compulsory
Airport Maintenance and Management	6	Optional
Airport Maintenance and Management	6	Compulsory
Applied Engineering Projects	6	Optional
Design and Testing of Aeronautical and Aerospace Systems	6	Optional
Digital Circuits and Systems	6	Optional
Discrete Simulation	6	Optional
Drone Design Project	6	Optional
Electroacoustic Devices for Communications and Sensors	6	Optional
Emc and Electrical Safety in Aeronautical Installations and Equipment	6	Optional
Engineering Projects	6	Optional
Fundamentals of Aeronautical Propulsion	3	Optional
Fundamentals of Telematics	6	Optional
Introduction to Technology Asset Management	3	Optional
Model Rocket Workshop	3	Optional
Projects in Air Traffic Management	6	Optional

Subjects	ECTS credits	Type
Projects in Air Traffic Management	6	Compulsory
Quantum Information Technology	6	Optional
Radioelectric Airport Infrastructure	6	Optional
Radiolocation	6	Optional
Radiolocation	6	Compulsory
Service and Application Design	10	Optional
Sesar and Swim: the Future of ATM Information Management	6	Optional
Simulation	6	Optional
Single European Sky ATM Research	6	Optional
Smart Airports and Facility Management	6	Optional
Social Impact	6	Optional
Space Communications: Mss and Gnss	6	Optional
Space Systems	6	Optional
Technical and Corporate Communication	6	Optional
Unmanned Aerial Systems	6	Optional
EIGHTH SEMESTER		
Internet Architecture and Protocols	6	Optional
Wireless Communications	6	Optional
Bachelor's Thesis	18	Project