

# 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

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### GENERAL DETAILS

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#### 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

#### Fees and grants

Approximate fees per academic year: €1,660 (€2,490 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](#)

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### ADMISSION

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#### 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](#).

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## PROFESSIONAL OPPORTUNITIES

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### 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.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### 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)

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## CURRICULUM

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Subjects	ECTS credits	Type
<b>FIRST SEMESTER</b>		
Algebra and Geometry	6	Compulsory
Business Management	6	Compulsory
Calculus (Aeronautical Engineering)	6	Compulsory
Chemistry	6	Compulsory
Fundamentals of Physics	6	Compulsory

<b>Subjects</b>		<b>ECTS credits</b>	<b>Type</b>
<b>Major in 2 Majors</b>	Algebra and Geometry	6	Compulsory
	Business Management	6	Compulsory
	Calculus (Aeronautical Engineering)	6	Compulsory
	Chemistry	6	Compulsory
	Fundamentals of Physics	6	Compulsory
<b>Major - Air Navigation</b>	Algebra and Geometry	6	Compulsory
	Business Management	6	Compulsory
	Calculus (Aeronautical Engineering)	6	Compulsory
	Chemistry	6	Compulsory
	Fundamentals of Physics	6	Compulsory
<b>Major - Airports</b>	Algebra and Geometry	6	Compulsory
	Business Management	6	Compulsory
	Calculus (Aeronautical Engineering)	6	Compulsory
	Chemistry	6	Compulsory
	Fundamentals of Physics	6	Compulsory
<b>SECOND SEMESTER</b>			
	Aerospace Technology and Air Transport	6	Compulsory
	Further Mathematics	6	Compulsory
	Graphic Expression	6	Compulsory
	Informatics I	6	Compulsory
	Mechanics	6	Compulsory
<b>Major in 2 Majors</b>	Aerospace Technology and Air Transport	6	Compulsory
	Further Mathematics	6	Compulsory
	Graphic Expression	6	Compulsory
	Informatics I	6	Compulsory
	Mechanics	6	Compulsory
<b>Major - Air Navigation</b>	Aerospace Technology and Air Transport	6	Compulsory
	Further Mathematics	6	Compulsory
	Graphic Expression	6	Compulsory
	Informatics I	6	Compulsory
	Mechanics	6	Compulsory
<b>Major - Airports</b>	Aerospace Technology and Air Transport	6	Compulsory
	Further Mathematics	6	Compulsory
	Graphic Expression	6	Compulsory
	Informatics I	6	Compulsory
	Mechanics	6	Compulsory
<b>THIRD SEMESTER</b>			
	Air Transport Infrastructure	7.5	Compulsory

Subjects		ECTS credits	Type
Further Mathematics 2		7.5	Compulsory
Informatics II		4.5	Compulsory
Linear Systems		4.5	Compulsory
Thermodynamics		6	Compulsory
<b>Major in 2 Majors</b>	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
<b>Major - Air Navigation</b>	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
<b>Major - Airports</b>	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
<b>FOURTH SEMESTER</b>			
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
<b>Major in 2 Majors</b>	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
<b>Major - Air Navigation</b>	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

Subjects		ECTS credits	Type
<b>Major - Airports</b>	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
<b>FIFTH SEMESTER</b>			
	Aerodynamics	4.5	Compulsory
	Electronics	6	Compulsory
	Meteorology	3	Compulsory
	Models for Air Traffic Management	6	Compulsory
	Structures and Strength of Materials	4.5	Compulsory
<b>Major in 2 Majors</b>	Aeronautical Communications 1	6	Compulsory
	Airport Communications	6	Compulsory
	Aerodynamics	4.5	Compulsory
	Electronics	6	Compulsory
	Meteorology	3	Compulsory
	Models for Air Traffic Management	6	Compulsory
	Structures and Strength of Materials	4.5	Compulsory
<b>Major - Air Navigation</b>	Aeronautical Communications 1	6	Optional
	Aerodynamics	4.5	Compulsory
	Electronics	6	Compulsory
	Meteorology	3	Compulsory
	Models for Air Traffic Management	6	Compulsory
	Structures and Strength of Materials	4.5	Compulsory
<b>Major - Airports</b>	Airport Communications	6	Optional
	Aerodynamics	4.5	Compulsory
	Electronics	6	Compulsory
	Meteorology	3	Compulsory
	Models for Air Traffic Management	6	Compulsory
	Structures and Strength of Materials	4.5	Compulsory

#### SIXTH SEMESTER

<b>Subjects</b>		<b>ECTS credits</b>	<b>Type</b>
<b>Major in 2 Majors</b>	Aeronautical Communications 2	6	Compulsory
	Air Navigation, Cartography and Cosmography	6	Compulsory
	Aircraft Operations	6	Compulsory
	Airport Planning and Processes	6	Compulsory
	Avionics	7.5	Compulsory
	Communications Installations	7.5	Compulsory
	Control and Guidance	4.5	Compulsory
	Electrical Installations	6	Compulsory
	Geotechnics	4.5	Compulsory
	Structural Theory	6	Compulsory
<b>Major - Air Navigation</b>	Aeronautical Communications 2	6	Optional
	Air Navigation, Cartography and Cosmography	6	Optional
	Aircraft Operations	6	Optional
	Avionics	7.5	Optional
	Control and Guidance	4.5	Optional
<b>Major - Airports</b>	Airport Planning and Processes	6	Optional
	Communications Installations	7.5	Optional
	Electrical Installations	6	Optional
	Geotechnics	4.5	Optional
	Structural Theory	6	Optional
<b>SEVENTH SEMESTER</b>			
	Adaptive Control and Processing	3	Optional
	Air Conditioning and Installations in Aircraft and Airport Systems	6	Optional
	Aircraft Communication Buses	3	Optional
	Aircraft Propulsion	6	Optional
	Aircrafts: Communication Buses	6	Optional
	Airlines: Transport, Management and Ethics	3	Optional
	Applied Engineering Projects	6	Optional
	Design and Test of Aeronautical and Aerospace Systems	6	Optional
	Digital Circuits and Systems	6	Optional
	Discrete Simulation	6	Optional
	Drones Design Projects	6	Optional
	Emc and Electrical Safety for Aeronautical Equipment and Installations	6	Optional
	Engineering Projects	6	Optional
	Fundamentals of Telematics	6	Optional
	Introduction to Technology Asset Management	3	Optional
	Model Rocket Workshop	3	Optional
	Quantum Information Technology	6	Optional

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
Radio-Electrical Airport Infrastructures	6	Optional
Service and Application Design	10	Optional
Sesar and Swim - the Future of the ATM Information Management	6	Optional
Sesar: Single European Sky ATM Research	6	Optional
Simulation	6	Optional
Smart Airport 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 Aircraft Systems	6	Optional

Subjects		ECTS credits	Type
<b>Major in 2 Majors</b>	Airport Buildings	6	Compulsory
	Airport Maintenance and Management	6	Compulsory
	Projects in Air Traffic Management	6	Compulsory
	Radiolocation	6	Compulsory
	Adaptive Control and Processing	3	Optional
	Air Conditioning and Installations in Aircraft and Airport Systems	6	Optional
	Aircraft Communication Buses	3	Optional
	Aircraft Propulsion	6	Optional
	Aircrafts: Communication Buses	6	Optional
	Airlines: Transport, Management and Ethics	3	Optional
	Applied Engineering Projects	6	Optional
	Design and Test of Aeronautical and Aerospace Systems	6	Optional
	Digital Circuits and Systems	6	Optional
	Discrete Simulation	6	Optional
	Drones Design Projects	6	Optional
	Emc and Electrical Safety for Aeronautical Equipment and Installations	6	Optional
	Engineering Projects	6	Optional
	Fundamentals of Telematics	6	Optional
	Introduction to Technology Asset Management	3	Optional
	Model Rocket Workshop	3	Optional
	Quantum Information Technology	6	Optional
	Radio-Electrical Airport Infrastructures	6	Optional
	Service and Application Design	10	Optional
	Sesar and Swim - the Future of the ATM Information Management	6	Optional
	Sesar: Single European Sky ATM Research	6	Optional
	Simulation	6	Optional
	Smart Airport and Facility Management	6	Optional
	Social Impact	6	Optional
	Space Communications: Mss and Gns	6	Optional
	Space Systems	6	Optional
Technical and Corporate Communication	6	Optional	
Unmanned Aircraft Systems	6	Optional	



Subjects		ECTS credits	Type
<b>Major - Air Navigation</b>	Projects in Air Traffic Management	6	Optional
	Radiolocation	6	Optional
	Adaptive Control and Processing	3	Optional
	Air Conditioning and Installations in Aircraft and Airport Systems	6	Optional
	Aircraft Communication Buses	3	Optional
	Aircraft Propulsion	6	Optional
	Aircrafts: Communication Buses	6	Optional
	Airlines: Transport, Management and Ethics	3	Optional
	Applied Engineering Projects	6	Optional
	Design and Test of Aeronautical and Aerospace Systems	6	Optional
	Digital Circuits and Systems	6	Optional
	Discrete Simulation	6	Optional
	Drones Design Projects	6	Optional
	Emc and Electrical Safety for Aeronautical Equipment and Installations	6	Optional
	Engineering Projects	6	Optional
	Fundamentals of Telematics	6	Optional
	Introduction to Technology Asset Management	3	Optional
	Model Rocket Workshop	3	Optional
	Quantum Information Technology	6	Optional
	Radio-Electrical Airport Infrastructures	6	Optional
	Service and Application Design	10	Optional
	Sesar and Swim - the Future of the ATM Information Management	6	Optional
	Sesar: Single European Sky ATM Research	6	Optional
	Simulation	6	Optional
	Smart Airport and Facility Management	6	Optional
	Social Impact	6	Optional
	Space Communications: Mss and Gns	6	Optional
	Space Systems	6	Optional
	Technical and Corporate Communication	6	Optional
	Unmanned Aircraft Systems	6	Optional

Subjects		ECTS credits	Type
<b>Major - Airports</b>	Airport Buildings	6	Optional
	Airport Maintenance and Management	6	Optional
	Adaptive Control and Processing	3	Optional
	Air Conditioning and Installations in Aircraft and Airport Systems	6	Optional
	Aircraft Communication Buses	3	Optional
	Aircraft Propulsion	6	Optional
	Aircrafts: Communication Buses	6	Optional
	Airlines: Transport, Management and Ethics	3	Optional
	Applied Engineering Projects	6	Optional
	Design and Test of Aeronautical and Aerospace Systems	6	Optional
	Digital Circuits and Systems	6	Optional
	Discrete Simulation	6	Optional
	Drones Design Projects	6	Optional
	Emc and Electrical Safety for Aeronautical Equipment and Installations	6	Optional
	Engineering Projects	6	Optional
	Fundamentals of Telematics	6	Optional
	Introduction to Technology Asset Management	3	Optional
	Model Rocket Workshop	3	Optional
	Quantum Information Technology	6	Optional
	Radio-Electrical Airport Infrastructures	6	Optional
	Service and Application Design	10	Optional
	Sesar and Swim - the Future of the ATM Information Management	6	Optional
	Sesar: Single European Sky ATM Research	6	Optional
	Simulation	6	Optional
	Smart Airport and Facility Management	6	Optional
	Social Impact	6	Optional
Space Communications: Mss and Gns	6	Optional	
Space Systems	6	Optional	
Technical and Corporate Communication	6	Optional	
Unmanned Aircraft Systems	6	Optional	
<b>EIGHTH SEMESTER</b>			
	Internet Architecture and Protocols	6	Optional
	Wireless Communications	6	Optional
	Bachelor's Thesis	18	Project
<b>Major in 2 Majors</b>	Internet Architecture and Protocols	6	Optional
	Wireless Communications	6	Optional
	Bachelor's Thesis	18	Project

<b>Subjects</b>		<b>ECTS credits</b>	<b>Type</b>
<b>Major - Air Navigation</b>	Internet Architecture and Protocols	6	Optional
	Wireless Communications	6	Optional
	Bachelor's Thesis	18	Project
<b>Major - Airports</b>	Internet Architecture and Protocols	6	Optional
	Wireless Communications	6	Optional
	Bachelor's Thesis	18	Project

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