

CAREER PROSPECTS

The Aeronautics and Space major provides opportunities in:

FIELDS

- Major French, European and global groups in the aeronautics and space industry
- Aeronautics and space groups' partner organisations and equipment manufacturers
- Engineering and technological consulting firms
- Public and private research organisations in the aeronautics, space and defence industry
- Companies dealing with the scientific and technical challenges associated with the management and optimisation of air traffic and transport
- Companies dealing with satellite operations
- Airlines
- Freight companies
- Aeronautical maintenance companies
- Airport operators

TARGETED POSITIONS

- Consulting engineer
- Aeronautics and space systems engineer
- R&D engineer
- Technical sales engineer
- Transversal project management engineer
- Aeronautics/space maintenance engineer
- Operations engineer
- Industrialisation engineer



PROJECTS

In Year 4, an engineering systems project on a drone is carried out.

In Year 5, projects are offered by industry executives relating to each track.

ANY QUESTIONS?

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For further information please check the "Application process for international students" section on our website www.epf.fr/en



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(Class of 2015)

I chose the "Aeronautics and Space" major with a view to deepening my knowledge, after the programs on aeronautics we had been following in previous years.

If you like the technical and mathematical aspects of engineering, all the courses are fascinating: you can enjoy discovering the world of space, studying the science behind satellites, rocket reactors and aircraft and even coding with Matlab.

The teaching is of high quality, as evidenced in the "launcher" project: sizing a spacecraft launcher and its performance in collaboration with the Centre national d'études spatiales (National Centre for Space Studies) was probably the most successful project in all my time at EPF.

As regards my final year project, I carried it out at **ONERA** (the French Aerospace Lab), where I needed to study the aerodynamics and deformation of a weather balloon.

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HELIICOPTER
AVIONICS
AERODYNAMICS
LAUNCH
AIRCRAFT
AERONAUTICS
& SPACE
MAJOR
PROPULSION
MECHANICAL
DESIGN
INDUSTRIALISATION-PRODUCTION
OPERATION-MAINTENANCE
COMPLEX SYSTEMS ENGINEERING



PROGRAM AIMS

The pedagogical aim of this major is to **train generalist engineers with a solid knowledge base of the aeronautics and space industry combined with strong skills in systems engineering, which is a structured approach of multidisciplinary design and integration.**

With systems engineering as the common theme, students acquire broad skills on all aspects of aeronautical and space craft design.



PROGRAM STRUCTURE

The **Aeronautics and Space major extends over two academic years and is organised around two in-class semesters**, alternating with two internship semesters: a student engineer internship in Year 4 and a "final year project" internship in Year 5.

During this major, students can finalise the engineer profile they choose, by following one of the three tracks offered:

- Study & Design
- Industrialisation & Production
- Operations & Maintenance

These three tracks enable to discover all the engineering jobs of the aeronautics and space business sector

COMPULSORY CUs – YEAR 4

COURSE UNIT	
Tools for engineers 64 h 5 ECTS	
Labour Law Business Game Statistics for engineers English	Knowing and being able to use to good purpose the essential tools for engineers.
Systems Approach 64 h 5 ECTS	
Complex Systems Engineering Applied Systems Engineering LifeCycle Analysis (PLM) Reliability, Adaptability, Maintainability, Safety (RAMS) Conferences	Understanding and knowing how to implement a systems approach. Understanding the aircraft or launcher design process.
Aeronautical & Space systems 64 h 5 ECTS	
Introduction to Aeronautics Introduction to Space Helicopter System Satellite System	Knowing and understanding the stakes in aeronautics and space fields.
Applied Mechanics 64 h 5 ECTS	
Orbital Mechanics Flight Mechanics Fundamental in Aerodynamics	Being able to understand the performance of an aircraft or launcher.
Structures & Materials Modeling 64 h 5 ECTS	
Sizing a structure with FEM Structures Dynamics Composites Materials	Being able to analyze the behaviour of a structure in static and dynamic in order to size it. Knowing how to make a draft sizing of a composite structure.
Systems Engineering Project (drone) 150 h 5 ECTS	

COMPULSORY CUs – YEAR 5

COURSE UNIT	
Systems Design I 64 h 5 ECTS	
On-board Servitudes - Flight Control Applied servo-control - Avionics Guidance - Navigation - Control	Understanding control systems and constraint systems.
On-board Energy 64 h 5 ECTS	
Aircraft Electrical systems - Launcher Electrical systems - Satellite Electrical systems - Electrical Propulsion - Launcher Propulsion - Aircraft Propulsion	Knowing how to define and analyse energy systems on board.
Systems Engineering Project (drone) 64 h 4 ECTS	
Networking 1 ECTS	
Project 150 h 5 ECTS	

ELECTIVE CUs – YEAR 5 – 1 track to be chosen

STUDY & DESIGN	
Mechanical Design 64 h 5 ECTS	
Fatigue - Damages Tolerance Structures Dynamics (experimental and simulation) Aerodynamics (experimental and simulation) Tests and instruments	Being able to design and calculate the dimensions of mechanical systems.
Systems Design II 64 h 5 ECTS	
Advanced servo-control Embedded systems Design and Regulation	Being able to design embedded systems.
INDUSTRIALISATION & PRODUCTION	
Industrialisation 64 h 5 ECTS	
Factory 4.0 Industrialisation	Understanding industrialisation processes and issues.
Production 64 h 5 ECTS	
Manufacturing Technics Project Management Production and Regulation	Understanding production processes and issues.
OPERATIONS & MAINTENANCE	
Operation 64 h 5 ECTS	
Aeronautical operations Space operations Satellites operations	Knowing air and space operations, as well as the associated legislation and certification.
Maintenance 64 h 5 ECTS	
Aeronautical Maintenance and Regulations Integrated Logistics Support (ILS) Global Support Package (GSP)	Knowing the issues and rules relating to maintenance.