

A photograph of a Space Shuttle in orbit above Earth. The shuttle is oriented vertically, with its nose pointing towards the top of the frame. The Earth's blue and white atmosphere is visible in the background. A large, semi-transparent white letter 'V' is overlaid on the left side of the image. The text 'MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING' is written in white, bold, sans-serif font across the middle-right portion of the image.

MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING

ESEIAAT

Terrassa School of Industrial, Aerospace
and Audiovisual Engineering



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

International Campus of Excellence

MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING

Developing faster and more efficient aircraft and spacecraft, optimising air transport and airport management in order to adapt to the sector's rapid growth and innovating in materials and propulsion systems are some of the possible career options for an aerospace engineer. The aerospace industry is evolving significantly every day and this growth requires vast teams of engineers with huge creative capacities working hard to find optimal solutions to great challenges. Most of our master's degree

Over 50% of master's degree students are international

Over 60% of doctoral candidates are international

85% of graduates would study at the ESEIAAT again*

90% graduate employment rate*

* Source: 5th graduate employment survey of graduates of Catalan universities by the Catalan University Quality Assurance Agency (AQU Catalunya, 2014)

Participation in international networks: CLUSTER, TIME, CINDA and Smile-Magalhães

students find a job even before they have finished their studies.

The master's degree in Space and Aeronautical Engineering aims to fulfil part of this demand by producing competent young professionals who are prepared to start a successful career in different fields of aerospace. The University offers seminars, workshops, visits and individual and group research projects to reinforce theoretical learning.

60 ECTS (1 academic year)

Curriculum

Starting in September

Language of instruction: English

1st semester

Computational Engineering	5
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Optional subjects (25 ECTS credits) to be chosen from the following:

Airport Operations	5
Airport Business Management	5
Airport Building Systems	5
Airport Infrastructure Management	5
Air Transport Management	5
Space Propulsion	5
Hypersonic Aerodynamics	5
Composite Materials	5
Astrodynamics	5
Spacecraft Design	5
Turbulence: Phenomenology, Simulation, Aerodynamics	5
Advanced Rocket Engines	5

Internal Aerodynamics and Aeroelasticity of Turbomachines	5
Advanced Jet Engines	5
Advanced Propulsion	5
Composite Materials	5
Advanced Heat and Mass Transfer	5
Numerical Methods in Heat and Mass Transfer	5
Aerospace Laboratories	5
Advanced Aeroelasticity	5
Advanced Aerodynamics	5
Aircraft Architecture and Systems	5
Composite Materials	5
Space Structures: Design and Behaviour	5
Project Management: Key Agreements and Deals	3

■ Compulsory subjects ■ Optional subjects

Your master's degree

The master's degree in Space and Aeronautical Engineering aims to fulfil part of the aerospace industry's demand by producing competent young professionals who are prepared to start a successful career in different fields of aerospace. The University offers seminars, workshops, visits and individual and group research projects to reinforce theoretical learning.

Professional opportunities

This master's degree allows students to guide their career towards companies in the aerospace industry and areas such as space missions, space and aircraft propulsion, aircraft design and maintenance, fluid mechanics, materials research, airport infrastructure, air traffic management, wind energy, aerodynamics, civil and automotive aerodynamics, and the design of civil applications of UAVs.

Work placements

The University has forums for establishing strong bonds between students and

companies, which usually lead to work placements and subsequent careers. Our master's degree students often manage to combine their studies with work placement agreements supervised by the University. Some examples of the destinations of our graduates are Airbus, GMV, ALG, Hemav and CATUAV.

Master's thesis

All students are required to write and defend a master's thesis during the second semester. It can be carried out at the following research groups:

- Structural Integrity, Micromechanics and Materials Reliability Centre (CIEFMA)
- Heat and Mass Transfer Technological Centre (CTTC)
- Acoustic and Mechanical Engineering Laboratory (LEAM)
- Laboratory of Aeronautical and Industrial Research and Studies (L'AIRES)
- Laboratory for Technological Innovation in Structures and Materials (LITEM)
- Motion Control and Industrial Applications Research Group (MCIA)
- Polymer and Composite Technology (POLYCOM)

- Advanced Control Systems (SAC)
- Thermodynamics and Physical Chemistry Group (TERFIQ)

Research

Students on the master's degree can come into contact with the research projects that are carried out at the School through its research groups or by carrying out an individual piece of research.

- Group research aims to involve students in a participative environment that every engineer should have some experience of when they enter the labour market. Under the supervision of an H2020 expert, each group drafts a full H2020 proposal using all of the templates and the evaluation rules of the European Commission.
- Individual research is meant for students who prefer to carry out a longer master's thesis (21.5 ECTS credits). During individual research, they begin to engage in the subject, which allows them to lay the foundations for their master's thesis and gives them the chance to develop more complex ideas or adapt better to external companies' work placement demands.

2nd semester

Research and Aerospace Project Management	10
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Optional subjects (6 ECTS credits) to be chosen from the following:

Design and Use of UAVs for Remote Sensing of the Environment	3
Acoustics	3
Game Theory	3
Structure of New Generation Materials	3
Science and Technology Communication in the Media	3
Infrared Thermography for Building Diagnostics	3
Application of GIS to the Built Environment	3

Introduction to Metaheuristics for Optimisation Problems	3
Implementation and Testing of Metaheuristics for Optimisation Problems	3
Project Management: Key Agreements and Deals	3
Advanced Space Propulsion	3
Thermal Turbomachines and Combustion	3
Geotechnical Engineering	3
Advanced Design of the Movement Area	3
Management and Operation of Terminal Buildings	3
Master's Thesis	14

Depending on the optional subjects chosen, students can take one of the following specialisations or simply a combination of subjects up to 25 ECTS credits:

- Air Transport and Airport Management
- Aerospace Vehicle Engineering
- Propulsion and Thermal Systems Engineering
- Spacecraft and Space Systems Engineering

MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING

The master's degree in Space and Aeronautical Engineering is a challenging professional and academic degree programme.

High-quality teaching

Highly practical content and one-on-one attention.

Work placements and relations with industry

Educational cooperation agreements, conferences, business forums and speed networking.

Internationalisation

Mobility and exchange programmes worldwide.

Outstanding student projects

The School helps you to undertake applied engineering projects.

Excellent, useful and international research

Technology research has become a core strategy of the UPC's Terrassa Campus.

Your talent, our pride.

Note the date for the information session at our website!

 eseiaat.upc.edu

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