International Master Aerospace Engineering

Degree level: Master
Training time: 2 years
Language: English
Status: Student
Campus: Lyon-Ecully Campus



The international master's degree **Aerospace Engineering** aims to train specialists in fluids, solid, and structural mechanics.

This master's program aims to:

- Train future technical leaders and researchers in the various aspects of the aerospace industry (R&D, major manufactures, experimental, production, and so

on).
- Develop international/intercultural skills.
- Train in the continuous optimization of components, taking into account manufacturing and maintainability constraints.
  Sensitize students to industry codes, languages and common practices.

Program

The Master's degree in aeronautics and space is organized into four semesters, culminating in a five- to six-month research internship.

Two options are offered:

- **Propulsion**
- **Aerostructures**

Semester 1: common to both options

Core science courses

- Mechanics of solids, materials and structures
- Numerical simulations for solid and fluid mechanics
- Experimental techniques for solid and fluid mechanics
- Fundamentals of compressible and viscous flow analysis

Production management

- Operational excellence
- Management of innovation processes

Interdisciplinary courses

- Foreign language: French
- Advanced design project

Semesters 2 to 4: depending on the option chosen

Propulsion Aerostructures

The "**Propulsion**" option aims to develop an understanding of the design process for an aeronautical or space engine.

Semester 2

Courses specific to the "Propulsion" option

- Numerical methods for mechanics
- Space physics and solar-terrestrial coupling
- Aircraft turbojets
- Optimal design and computational fluid dynamics
- An introduction to meteorology and oceanography

Common courses

- Foreign language: French
- Advanced research project
- Intercultural studies

Semester 3

Courses specific to the "Propulsion" option

- Aerothermodynamics of turbomachinery
- Aircraft pre-design project
- Propulsion design project
- Two courses to choose from 8 proposals
- Physics of turbulent flows, combustion for propulsion, structural dynamics, aerodynamically generated sound, transonic aerodynamics, air and ground transportation noise, unsteady flows in turbomachine, stability of rotating machines, numerical simulations of flows
- Three courses to choose from 24 proposals

Semester 4

Semester 4

The last five or six months of the curriculum are devoted to the Master's thesis research project, which can be carried out either in an academic research laboratory or in an industrial environment. Students have the option of carrying out their thesis project anywhere in France or abroad.

The "**Aerostructures**" option focuses on the materials and structures aspects of aeronautics and space. Lightening is one of the training priorities.

Semester 2

Semester 2

Courses specific to the "Aerostructures" option

- Rotor dynamics in mechanical engineering.
- Introduction to random vibrations.
- Materials observation and analysis.
- Materials selection.
- Polymeric materials: physical properties and innovation.

Common courses

- Foreign language: French.
- Advanced research project.
- Intercultural studies.

Semester 3

Semester 3

Courses specific to the "Aerostructures" option

- Project P3: Process, product and performance.
- Materials and structures.
- Fluid-structure interactions.
- Health control of structures.
- Noise (vibration transport and control).
- Language.
- Mechanics of composite materials.

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Diploma and certification

This course delivers a national master's degree - controlled by the State.



Career opportunities

After graduation, around two-thirds of students find employment in industrial companies, subcontractors or design offices specializing in the sector.
The other third go on to a PhD in a research laboratory or in partnership with an industrial company.

Focus

The course is backed by **three internationally renowned laboratories**:

- The Laboratory of Fluid Mechanics and Acoustics (LMFA)
- The Laboratory of Tribology and Systems Dynamics (LTDS)
- The Ampère laboratory

Admission requirements and application

Pre-requisites

- Master 1: Bachelor's degree in a scientific subject related to the Master's topics. English level B2.
- Master 2: Successful M1 in a subject related to the Master's topics. English level B2.

Application

Applications are considered on the basis of a portfolio.

Find out how to apply

Tuition fees

Acknowledging and anticipating your expenses is essential before committing to a training course with confidence.

Find out more about Master's course fees Discover the average budget for studies at Centrale Lyon

Administrative contact

Education department - International Masters

Information and registration

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Educational contact

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Useful link

- Discover the training syllabus