



**CENTRALE  
LYON**

# 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 research 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:
- Noise, combustion, turbulent flows, acoustics, automation, modeling and scientific computing
- 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.
- Mathematical and numerical analysis.

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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

[scolarite.registration@listes.ec-lyon.fr](mailto:scolarite.registration@listes.ec-lyon.fr)

## **Educational contact**

Quaegebeur Samuel

Enseignant-Chercheur

samuel.quaegebeur@ec-lyon.fr

## **Useful link**

- [Discover the training syllabus](#)