


Excellence with passion

# MASTER OF SCIENCE IN AEROSPACE ENGINEERING

2020



# ISAE-SUPAERO GRADUATES: more than a century of achievement

■ **Inventors:** from the designer of the first jet aircraft to the inventor of the black box

■ **CEOs and high level executives** at Airbus, Dassault, Safran, Thales, ATOS, AXA, IBM, and countless other industry leaders in France, Europe and all over the world

■ **Directors of major programs** such as Caravelle, Concorde, Airbus A320, Airbus A380 and Airbus 350

■ **Astronauts**

Three of today's European astronauts attended ISAE-SUPAERO: Samantha Cristoforetti, Italy, ISAE-SUPAERO research project in 2000, Thomas Pesquet, France, ISAE-SUPAERO 2001 graduate, Luca Parmitano, Italy, ISAE-SUPAERO 2009 Advanced Master's program graduate.

## AT THE FOREFRONT OF AEROSPACE INNOVATION SINCE 1909

*A world leader in aerospace engineering higher education*

We have already trained more than 22 700 engineers who are contributing to the development of the aeronautics and space sector in France and around the world. Our engineers' vocation is to become future leaders in the aerospace industry and the world of tomorrow. That is why we have developed an integrated approach with training, research and innovation in partnerships with academic players, many industrial stakeholders and a network of the best international universities.

**A wide range of degree programs  
in aerospace engineering:**

**33** programs

**1700** students

**1500** Masters and **200** PhDs

**31%** international students

**66** nationalities are present on campus

An extensive, **active international alumni** network

An exceptional environment in the heart of Toulouse

Europe's leading hub of aerospace industries, laboratories and universities

A Public Institution of higher education and research





# Master of Science

*The Master of Science is a two-year program undertaken after undergraduate studies, including Bachelor's degree or an equivalent degree. It provides higher qualification for employment or further doctoral studies.*

*The ISAE-SUPAERO Master of Science degree program is internationally renowned and highly regarded as an innovative program in science and technologies. Fully taught in English, this program is designed to prepare engineering students to find and develop solutions to today's and tomorrow's challenges facing the world and the aerospace industry.*

*The Master is accredited by the French Ministry of Higher Education and Research in line with the European higher education system.*



## OBJECTIVES

*In order to support its steadily growing and to maintain business competitiveness, the global aerospace industry needs high qualified engineers or researchers. Design complex aerospace systems involve multinational geographically disseminated teams of project managers or various experts working in collaborative environment through integrated development platform tools.*

*The Master of Science in Aerospace Engineering is intended to educate graduate students in subjects relevant to these demanding challenges and needs of the industry.*

*Giving students competences in engineering science, technology and design related to aeronautics and space, the MSc AE is designed to be multidisciplinary preparing future engineers to easily and efficiently work on aeronautical systems, space systems and their applications, with emphasis on the complete life cycle of the system. With a large spectrum of knowledge the MSc AE allows students to tackle various aspects from design to operations of products and systems either in a research organism or in an aerospace company in a multinational environment.*

## LEARNING APPROACH

*The ISAE-SUPAERO Master's program is designed with a combination of lectures, tutorials, study cases and projects to be performed in industrial environment or in ISAE-SUPAERO's laboratories. It is taught in English.*

*The MSc AE program includes three-semester academic session, in ISAE-SUPAERO's premises, provided by permanent professors and experts from aerospace industry bringing current knowledge and experience.*

*The last semester consists in a master thesis to be performed in a company or a laboratory in the aerospace sector. After the thesis, students having obtained 120 credits under examination will be awarded the Master of Science in Aerospace Engineering from ISAE-SUPAERO.*

# A multidisciplinary curriculum

FULLY TAUGHT IN ENGLISH

4 SEMESTERS OF 30 ECTS EACH

The first semester focuses on the common core curriculum. It takes also into account the background of the students, while the second semester offers a wide choice of nineteen electives.

In the third semester, students choose from among seven concentrations spanning the main areas of aeronautical and space systems design.

Sciences & engineering, project management & systems engineering, foreign languages

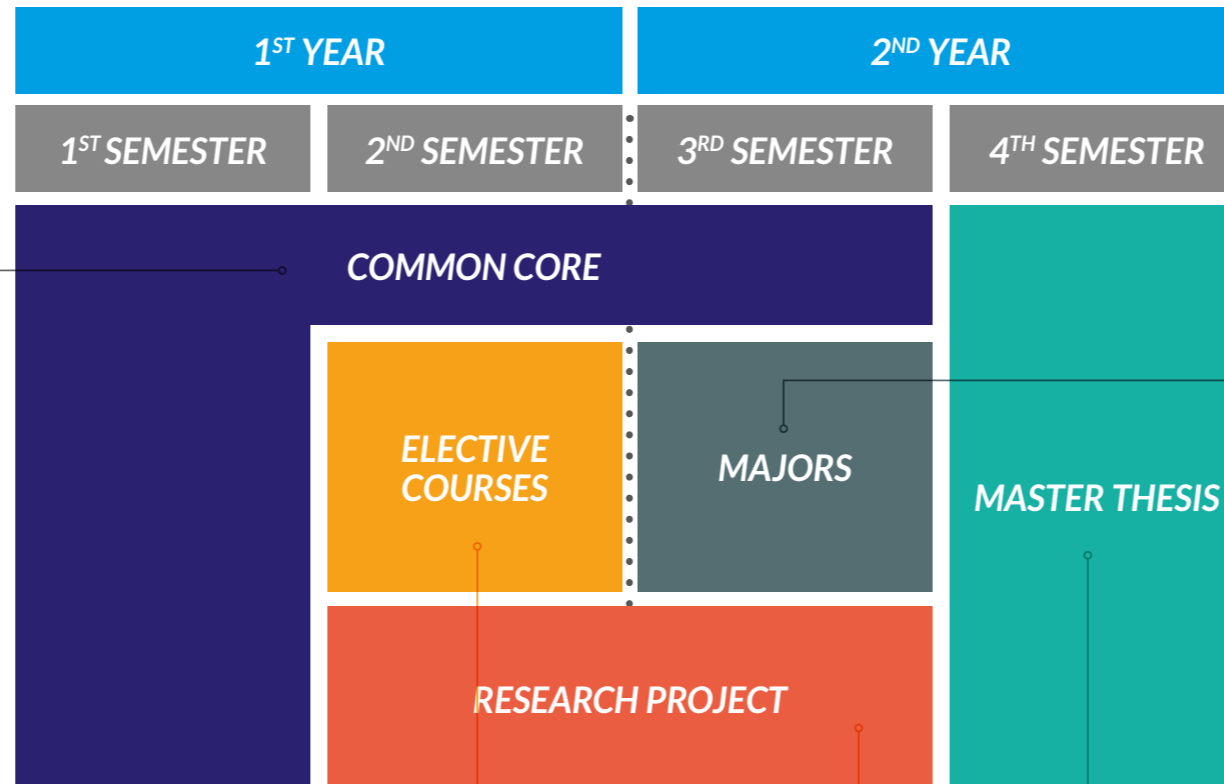
French Classes for beginners during the two years program

A choice of 7 areas of expertise:

- Advanced Aerodynamics and propulsion
- Aerospace structures
- Aerospace systems and control
- Embedded systems
- Space systems
- Systems engineering
- Space imaging navigation and communication

ACCREDITED BY THE FRENCH MINISTRY OF HIGHER EDUCATION AND RESEARCH

IN LINE WITH THE EUROPEAN HIGHER EDUCATION SYSTEM



19 electives to broaden students' horizons in new areas

INDUSTRY PLACEMENT (OPTIONAL)

Students have extensive opportunities to develop a scientific skills approach through research projects in ISAE-SUPAERO laboratories in second and third semesters along with on-the-job skills during internships in the aerospace industry

In a company or a research laboratory







# Common core

The core curriculum is multidisciplinary with a strong grounding in science and engineering, along with courses in project management and foreign languages

## Sciences & engineering

Objective: to master solid technical and scientific skills in the major disciplines related to aerospace engineering

- Aircraft systems
- Space systems
- Human factors
- Airworthiness
- Control
- Aerodynamics & propulsion
- Flight dynamics
- Aeronautical structures
- Applied mathematics
- Algorithm and computing
- Signal processing
- Cyber physical systems

## Project management & systems engineering

Objective: to develop a global, interdisciplinary approach to the design and development of a product or a system

- Project management
- Systems engineering

## Foreign Languages and Soft Skills

Objective: to prepare students to communicate and to work in evolving multicultural, team-oriented environments.

- Languages: french as a Foreign Language, German, Arab, Chinese, Spanish, Italian, Japanese, Portuguese, Russian
- Intercultural Workshop
- Soft Skills : self discovery, team work, negotiation, professional techniques...

# Electives

Students select four electives among a choice of nineteen

- Aeroengines Architecture & Performance - Acoustics - Experimental Approach in fluid dynamics - Software for CFD
- Mechanics of materials & structures - Aircraft structures - Computational solid mechanics - Structure design project
- Software engineering - Simulation for systems engineering - Systems architecture - Space Instrumentation
- Control of dynamic systems & implementation - Aircraft control & guidance - Adaptive control - Real time control of an aerospace system
- MDO - Instrumentation & flight data analysis - Aircraft design methods

# Research Project

Projects are a key component of the program and are designed to broaden students' scientific, intellectual and social horizons.

- This research project features an experience of research at graduate level over 2 semesters with a focus on acquiring in-depth knowledge, expanding autonomy, and fostering innovativeness and the ability to think critically.

# Majors

Students focus on one of seven areas of expertise including:

## Advanced Aerodynamics and propulsion

- Applied Aerodynamics
- Aeroelasticity & Flexible Aircraft
- Advanced aerodynamics of turbomachinery
- Physics and Modelling turbulence
- Aeroacoustics
- Numerical fluid mechanics and High Performance Computing
- Multiphase Flow and Combustion

## Aerospace structures

- Aeroelasticity & Flexible Aircraft
- Aerospace Structures
- Computational Solid mechanics
- Manufacturing
- Mechanics of materials
- Space Structures

## Aerospace systems and control

- Multivariable systems
- Control of flexible structures
- Robust and optimal control
- Systems identification and estimation
- Non-linear control
- Hybrid control
- Avionics
- Aircraft Power Architecture
- Aircraft & Space Actuation Systems
- Preliminary Design
- Model & Sizing of Aircraft
- Air Conditioning Systems

## Embedded systems

- Architecture and Programming of SW systems
- Design and Synthesis of Hardware Systems
- Real Time Systems
- Real Time Network
- Model Based System Engineering
- Artificial Intelligence and Autonomous Systems
- System Dependability
- Certification

## Space systems

- Space environment and effects
- Mission analysis and orbital
- Space communications systems
- Space projects: tools for simulation
- Space projects financial and legal
- Satellite engineering and design
- Advanced control and applications
- Satellite AOCS
- Launchers guidance and control
- Satellite electrical systems
- On board data handling subsystems: functions and architectures
- Satellite thermal control systems
- Estimation and filtering

## Systems engineering

- Systems Dependability
- System Performance Assessment & Management
- System Engineering Data Technical Data Management
- Systems Design and Architecture
- Introduction to verification & validation
- Systems Modeling and Analysis
- Airbus Study case : Systems Engineering & certification of the A380

## Space Imaging Navigation & Communication

- Random signal processing and estimation
- Electromagnetism
- Wireless electronic systems
- Satellites and orbits
- Digital communications basics
- Telecommunications and networks
- Broadband satellite communication systems
- Remote sensing and sensors
- Satellite-based navigation

## Pathway Aircraft Design and Operation:

Student attending majors Aerospace structure and Aerospace system and control can follow the pathway Aircraft Design and Operation. In this case they attend two dedicated modules, in semester 2, and they perform their research project in this field.

# Master thesis

- The master thesis is performed either in industry or in a laboratory. It enables the student to develop deeper knowledge, understanding, capabilities and attitudes. The overall goal of the thesis is for the student to demonstrate the knowledge and capability required to address successfully scientific or industrial challenges.





# Acquiring research experience

## PhD Track:

Every year, several Master Graduates pursue PHD studies in our laboratories. Msc and PhD programs can be connected in the frame of a PhD Track, supported by Toulouse School of Aerospace Engineering (TSAE).

Research laboratories host students to complete their research projects

**360**

researchers on campus

**6**

doctoral schools

An international center to host and train doctoral students

We are deeply committed to offering our students full access to our research capabilities as well as academic and industrial partnerships, covering the entire field of aerospace engineering. From a research policy point of view, the dual objective is to foster the development of new knowledge as well as to answer the needs of the aerospace industry. Our main research partners are ONERA (the French Aerospace Lab.), LAAS-CNRS and OMP (Astronomical Observatory Midi-Pyrénées), the largest French laboratories in the engineering science and space fields. We have numerous long-term research and development agreements with the main European aerospace companies: Airbus, SAFRAN, Thales Alenia Space, Rockwell-Collins, MBDA and Liebherr-Aerospace. Reflecting our longstanding commitment to aerospace higher education and research, we are a member of the management board of the Aerospace Valley cluster (550 aerospace companies and higher education and research institutions from the Nouvelle-Aquitaine and Occitanie Regions).







*A multidisciplinary scientific policy:*  
**5 teaching and research departments**

**1** ■ The Aerodynamics, energetics and propulsion Department develops its research activities on three axes:

- Turbomachines and propulsion
- Aerodynamics
- Fundamental fluid dynamics

**2** ■ The Mechanics, structures and materials Department is part of the Clément Ader Institute that gathers in a single laboratory all the research capabilities of the Occitanie Region (UPS, INSA, ISAE-SUPAERO, IMT Mines Albi-Carmaux). ISAE-SUPAERO professors' research is focused on:

- Mechanical system modelling
- Materials & composite structures
- Surface treatment

**3** ■ The Electronics, optronics and signal processing Department is organized into 4 research groups:

- Signal, communication, antennas, navigation
- Microelectronic image sensors
- Space systems for Planetology & Applications
- Optoelectronics for payloads and aerospace communications

**4** ■ The Complex systems engineering Department concentrates research driven in the multidisciplinary scientific fields:

- Applied math
- Communication networks
- Decision making systems
- Engineering for critical systems

**5** ■ The Aerospace vehicles design and control Department dedicates to the efficient and safe design and operation of vehicles. The three research groups:

- Aerospace Vehicles Design,
- Decision and Control,
- Neuroergonomics and Human Factors

All 5 departments support a micro-aerial vehicle development program at an international level, on the basis of student projects, research and innovation projects, and international competitions.



**World class research facilities**

- Autonomous system platform for micro-drones and robots
- Critical embedded systems platform
- Flight simulators and neuroergonomics platform
- Wind tunnels, aeroacoustics wind tunnel
- Turbofan Test Bed
- Drop tower, gas guns
- Fleet of 9 aircraft : TB 20, Robin DR 400, Vulcanair P68 Observer
- Software defined radio room
- Clean rooms for satellite integration
- Ground station for satellite tracking and operation
- Satellite command and control center







# Student Projects

## THE AIAA DBF COMPETITION

During eight months, six second year students of the Master of Science in Aerospace Engineering have designed and built a radio controlled aircraft, in order to participate in the biggest academic aeromodelling competition in the World: the American Institute of Aeronautics and Astronautics (AIAA) Design/Build/Fly (DBF) competition in the United States.

They have formed a multicultural team with more than five nationalities represented: French, Ecuadorian, Italian, Spanish, and Indian. Each member comes with a different level of professional experience and educational background such as Aerospace Engineering, Mechanical Engineering, and Electrical Engineering and are cursing in the System Engineering major, System and Control major, and Aerodynamic and Propulsion major.

This event was an opportunity for them to apply classroom theory in real world.

The team is subdivided into several workgroup:

- Structures and Design
- Aerodynamics
- System and Control.

The objective was to design and fabricate a multi-purpose aircraft to support carrier operations. The aircraft must be able to take off from a 4 feet wide by 10 feet long launch ramp at an angle of 5°, it must have a tail hook for restraint during power up, and the span of the aircraft must be at least 4 feet. Additionally, the aircraft must carry a minimum of four attack stores (large dart rocket), it must have a rotating radome, and it must have folding surfaces such that it fits inside a space of 3 feet wide by 2 feet high in the stowed condition.

Thanks to financial support of the Foundation ISAE-SUPAERO, that accompanies student projects, the team took part and has presented their aircraft at the competition.

Project realised by

Pierre Troillard, Mateo Tobar, Enrico Baracaglia, Benjamin Solomon, Marc Arumi and Alba Aronax (MSc 2019)



## ARTERY IN MICROGRAVITY

How the fluid dynamics within a coronary artery will behave in space?


Would microgravity and radiation have an effect on the performance of coronary stents?

These are the ambitious questions that a group of students is investigating as part of their research project. The Team AIM (Artery in Microgravity) led by two second year students of the Master of Science Aerospace Engineering major Space System, Olivia Drayson and Nicolo Bernardini won in October 2018 the European Space Agency's first ever "Orbit Your Thesis" program.

The future experiment, that will be launched on the International Space Station (ISS) in 2020, will be a 2U (20cmx10cmx10cm) experiment cube housed in the ICE Cubes facility on board the ISS and will act as a test-bench for investigating vascular haemodynamics in microgravity. An electric pump and reservoir will mimic the heart and a blood-mimicking fluid will be pumped around a closed loop of vessels containing two models of a coronary artery in series

One model of the coronary artery will contain a coronary stent. The pressure of the fluid will be studied along its path using a series of pressure sensors and a camera will visualize the flow. Ground tests will be conducted concurrently in order to perform a comparison between the on-ground behavior and the behavior in microgravity. The AIM Team has now increased to nine members. Seven other students with strong background in mechanical, electronical, medical and biological areas have joined the team and bring their different skills. One group will be in charge of the electronic and mechanics fields and the other one will be more focused on the scientific part.

Thanks to the "Orbit Your Thesis" program, ESA Academy will fund the launch of the experiment cube to the ICE Cubes facility on the International Space Station for a 4 month space mission. ESA Academy will also follow the AIM Team through the year by performing environmental test, supporting the project (50,000 euros) and assisting in developing their experiments. The AIM Team has already made one week training at the ESA in Redu, Belgium.



Michele Genoni, Federico Falcone, Olivia Drayson, Nicole Bernardini, Federica Vagnone, Luca Cerquetani and Alessandro Cipolletta from AIM Team.





# Growing professional experience



By the time they have graduated, MSc students will have completed several experiences during which they have a hands-on opportunity to develop team work methods, project management skills, and research practices, as well as working in a multicultural, international environment.



## Industrial experience

- Master thesis (1 semester)
- Optional internship (2 months)

**RAGHU VAMSI DEEPTIHANATHIS:**  
India - P3 (Toulouse - FRANCE).

Going ahead with my decision for doing Masters in Aerospace Engineering, ISAE-SUPAERO stood at the top. Interesting course structure, innovative projects, and the location: Toulouse which is considered the hub of Aerospace. I took Aerospace systems and controls as my major for specialization. In my second semester, I got a chance to do my research project for a year on a CNES satellite mission under a CNES Scientist. In my final semester I did my internship in an industry where I gained knowledge and implemented logic, algorithms for the automatic aircraft part design and placement. I understood that my work was going to bring some improvements in the existing industry. Now I am an Aerospace automation engineering developer. In parallel to my work, I am doing my research, which is funding by my company and some ISAE-SUPAERO students are also working with me on this project.



## International experience

Different options to get an international experience:

- Master thesis (1 semester)
- Optional internship (2 months)

**ESTHER SUSANA RUFAT MEIX**  
Spain - Dassault Falcon Jet (Little Rock - USA)

After deciding that Engineering was the path I wanted to follow for my future career, I was looking for a deeper connection with the industry and more research opportunities. All of this led me to choose ISAE-SUPAERO, as it offered me the opportunity to attend lectures given by professionals from the industry and to carry out a two-semester research project. During the MSc, I chose the Structures Major, so I took theoretical and practical courses focused on structures and materials and learned how to use relevant software necessary to work in this field. As for the Master thesis, I worked at Dassault Falcon Jet in Little Rock, Arkansas (USA) as a part of the Design Engineering team. There, my tasks focused on the optimization of the cabin dividers of Falcon Aircraft to reduce costs and weight. I believe this internship during the 2nd year was essential for me, as it helped me prepare for my future professional career.

After completing the internship in the USA, I started a 1 year graduate program at the European Space Agency (ESA) in Belgium, where I currently work as a systems engineer and project manager for several CubeSat projects. This is an opportunity that I am really enjoying, as I am very passionate about CubeSats and even worked on the ISAE-SUPAERO EntrySat CubeSat as part of my research project during the MSc program.



## Research and innovation experience

Working in an ISAE-SUPAERO research department or laboratory in France or abroad

- Research project
- Master thesis
- Optional internship

**MARTA RASTEIRO DOS SANTOS :**  
Portugal (Recipient of Gifas Scholarship Award)  
ISAE SUPAERO, Department of Aerodynamics, Energetics and Propulsion (Toulouse -FRANCE)

My decision to enroll the Master of Science at ISAE-SUPAERO was based in two major facts: my interest for Fluid Dynamics and Aeronautics and the high-level education and reputation of ISAE-SUPAERO in this field. During the master, I developed a strongly consolidate expertise in Aerodynamics, Fluid Mechanics and Propulsion, given by the Major of Advanced Aerodynamics and Propulsion, and, at the same time an overall insight of the Aeronautic and Aerospace fields. Currently, I am doing my Master thesis in the ISAE- SUPAERO - Department of Aerodynamics, Energetics and Propulsion - where I joined a research team working in the understanding of the development of a fluid dynamic instability. This internship represents for me a first contact with the research world, where I am having the change to improve my practical capacities and to expand my theoretical knowledge.



# Close collaboration with companies & industry

# For your future a wide range of exciting career perspectives

**250**

companies support our development



**1800**

engineers, and/or researchers from leading companies are visiting lecturers. They deliver courses based on the latest industry developments and practices.



The ISAE-SUPAERO Career Center provides support for students entering the workforce

Every year companies receive more than

**800**



ISAE-SUPAERO students for internships and master thesis. Conferences, industrial visits, internships in companies, forums, recruitment workshops

CAPGEMINI  
 IAC ARIANE GROUP  
 PRAMANA ATR ACCENTURE  
 DASSAULT ALTRAN  
 AVENCORE CNES RENAULT  
 AIRBUS SAFRAN  
 AKKA THALES ROLLSROYCE PWC  
 STELIA MBDA WAVESTONE ALTEN  
 AIR LIQUIDE AIRFRANCE  
 CYLAD LIEBHERR MECANO ID  
 THEANO ADVISORS DAHER  
 ATOS SOPRA STERIA  
 EY



An alumni network of over

**22 700**

graduates

More than **30**

partnerships signed with small and medium-sized companies and major industrial players



**12**



company chairs for teaching and research in innovative programs in safety with Axa, transport aircraft innovative concepts and space with Airbus Group and Ariane Group, in technological innovation with Daher, Embedded systems engineering and architecture with Thales...

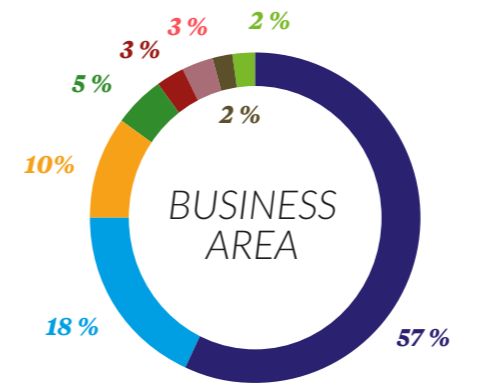
## LARGE JOB OPPORTUNITIES

Our graduates will work as technical experts, researchers and managers in the fast-expanding aerospace sector and key sectors of the economy, in Europe and all over the world.

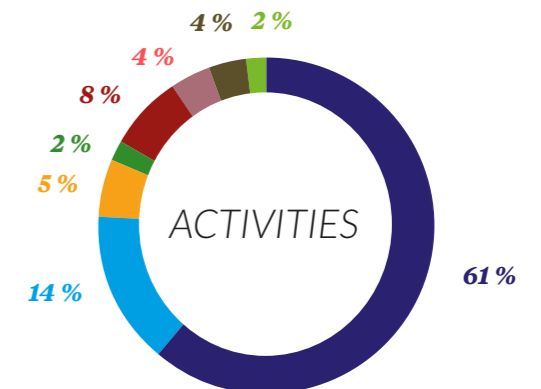
## CLOSE-UP ON THE CLASS OF 2018

**96 %** Hired less than four months after obtaining the degree

**85 %** Started their career in France More than 70% work in Toulouse area



■ Aeronautic ■ Space ■ Research and development  
 ■ Consulting firm (in management strategy..) ■ Accommodation and food services  
 ■ Automotive ■ Transportation ■ Others



■ Research and development ■ Studies, Advisory and Expertise  
 ■ Others ■ Informatics ■ Maintenance and Support  
 ■ Administration, Management Dpt, Finance, Accounting  
 ■ Quality Security Operational Safety  
 ■ IT Operations / Maintenance

## MAIN RECRUITERS

AIRBUS, AKKA, ALTRAN, THALES, ALTEN, EXPLEO, ALCIMED, ATOS, ATR, BCG.





# Campus life in the heart of Toulouse

## Toulouse, European Capital of aeronautics and space

Nearly **90 000** direct jobs in aeronautics and space  
The leading French region for research and aeronautics education.

### 4th city and university of France

Known as «la ville rose», in reference to the color of the city's many historical brick buildings  
Repeatedly voted by the French as one of the most desirable places to live in France: exceptional quality of life, a great place to live as a student !

**Located at the heart of the scientific and university complex, our campus includes 22 hectares along the UNESCO classified, lovely Canal du Midi. Teaching, living and sports facilities – we have it all!**



# Welcome to our outstanding campus



## A complete range of athletic facilities

You will enjoy the pool, gym, climbing walls, fitness center, football and rugby fields, tennis and squash courts.

**More than 80 clubs** for a dynamic associative life: culture, sports, technical clubs (micro-drones, space club, aeromodelling, robotics, etc.), social and humanitarian actions, event organization, etc.

## Practicing aeronautical sports

**Ten minutes from campus**, we have a fleet of **9 planes** (TB 20, Robin DR 400, P68 Observer...). Students have the opportunity to earn a wide choice of flight licenses under very preferential conditions: powered aircraft gliding, parachuting, and paragliding. Every year 35 students obtain a pilot's license.



## Student residences and the Student Center

The **6** entirely new residences offer **1000** housing units, from **14m<sup>2</sup>** to **46m<sup>2</sup>**. Residences include common areas such as study rooms, kitchens, and laundry rooms. The Student Center includes a large main room with a snack bar area, a living room, TV rooms, and rooms for student clubs and activities.



- Paris by Plane
- Downtown by car
- Cycling to the metro
- Mediterranean Sea by car
- Pyrénées mountains by car



The ISAE-SUPAERO Toul'box: a student welcome kit to make life easier right from day one: formalities, setting up a bank account, housing, language courses, cultural activities-find out all you need to know and get started right away!  
Find out more at: <https://toulbox.univ-toulouse.fr>  
(Our Packages > Special packs > ISAE-SUPAERO)



# Funding

Our Master of Science students can benefit from financial support from ISAE-SUPAERO Foundation and partners.



## ISAE-SUPAERO Foundation scholarship

This grant covers tuition fees and allows students to loan to €12000 without interest. This amount must be refunded within 2 years after graduation according to a schedule agreed upon with the ISAE-SUPAERO Foundation.

## TSAE

### Toulouse School of Aerospace Engineering

Toulouse School of Aerospace Engineering (TSAE), a joint program between ISAE-SUPAERO, ONERA and ENAC aims at promoting graduate and PhD programs in the aerospace engineering domain. Towards this end, it offers scholarships to undergraduate students who wish to enter the MSc in Aerospace Engineering of ISAE-SUPAERO and to pursue in a PhD program.

## AIRBUS

### CEDAR Excellence scholarship

The scholarship of the Chair for Eco-Design of Aircraft (CEDAR) by Airbus covers tuition fees and part of living expenses. (Major related to Aircraft)



### GIFAS Program of Excellence

This scholarship covers tuition fees and part of living expenses.

## THALES

### ARISE Excellence scholarship

The scholarship of the Chair ARISE, by Thales, for applicants to the MSc Aerospace Engineering (major "Embedded Systems" on the third semester) covers tuition fees and part of living expenses.



### MBDA Program of Excellence for Indonesia at ISAE-SUPAERO

This scholarship covers tuition fees and part of living expenses.



### MBDA Program of Excellence for India at ISAE-SUPAERO - Sponsored by the French Embassy in India.

This scholarship covers tuition fees and part of living expenses.

For more information on financial aid for foreign students in France, visit the Campus France website: <http://www.campusfrance.org>.

Many government scholarships are available as well (CONACYT (Mexico), BECAS CHILE (Chile), COLFUTURO (Colombia), CIENCIA SEM FRONTIRAS (Brazil), BEC-AR (Argentina)...

# Join the MSc in aerospace engineering program



## Eligibility

Fully taught in English, the program is particularly suitable for students with:

### ■ A bachelor's degree in aerospace or aeronautical engineering, mechanical engineering and mechatronics

All majors are open to these students: Advanced aerodynamics and propulsion, Aerospace structures, Space systems, Aerospace systems and control, Embedded system, Systems engineering, Space Imaging Navigation and Communication.

### ■ A bachelor's degree in electrical engineering, electronics, telecommunications

Five majors are open to these students: Space systems, Aerospace systems and control, Embedded systems, Systems engineering, Space Imaging Navigation and Communication.

### ■ Others profiles in Engineering or Science

Industrial engineering, civil engineering or physics, mathematics, computer sciences (ISAE-SUPAERO admissions officers will provide them with information on the major open to them).

## On line application documents

- Resume,
- Cover letter,
- Copy of highest diploma or certificate of enrollment,
- Transcripts for the 3 last years,
- 2 letters of recommendation
- TOEFL (IBT): 85 points (Inst. code: 9820), or TOEIC: 785 points, or IELTS: 6.5 points, or CAE/ FCE : 170 points,
- GRE test results if available (not mandatory)

For more information on the admissions procedure, please visit: [www.isae-supaero.fr/en/academics/master-s-degree-msc/admissions/](http://www.isae-supaero.fr/en/academics/master-s-degree-msc/admissions/)





**Address**

ISAE-SUPAERO  
10, avenue E. Belin  
BP 54032  
31055 Toulouse CEDEX 4  
France

**Telephone**

33 (0)5 61 33 80 13

**Contact**

info-masters@isae-supaero.fr

**Website**

[www.isae-supaero.fr/en](http://www.isae-supaero.fr/en)



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