



# AERONAUTICAL ENGINEERING

## MAJORS AIRCRAFT DESIGN / FLIGHT TEST ENGINEERING

### ADVANCED MASTER

#### ONE YEAR FULL TIME

- 6 months of courses
- 6 months of professional thesis or internship.

#### TEACHING LANGUAGE

- English

#### START OF CLASSES

- End of September

#### LOCATION

- ISAE-SUPAERO, Toulouse, France

#### KEY POINTS

- 360° training on aeronautical engineering.
- Renowned lecturers/researchers especially on human factors topics.
- Fleet of 8 aircraft to acquire flight skills and experience.

#### HEADS OF PROGRAM

- ISAE-SUPAERO: Prof. Scott DELBECQ  
*Scott.DELBECQ@isae-supaero.fr*
- Prof. Florent LUTZ  
*florent.lutz2@isae-supaero.fr*

#### CONTACT

- [info-programmes@isae-supaero.fr](mailto:info-programmes@isae-supaero.fr)

More information



## OBJECTIVES

The TAS AERO Advanced Master program is dedicated to Aeronautical Engineering and Human Factors. The program includes a common core and one of the following majors : Design process and Engineering (TAS AERO-ADE) or Flight Test Engineering (TAS AERO - FTE). The TAS AERO Advanced Master enables students to develop a high level of expertise in engineering science, human factors, current aeronautical technologies and design.

*The TAS Aero curriculum includes a broad spectrum of subjects with the following objectives:*

- develop an integrated approach to the product design and validation, while acquiring the skills in the disciplines and techniques required in the aeronautical sector,
- make future engineers aware of human factors issues,
- facilitate work on multidisciplinary projects in aeronautics with a very practical approach,
- develop skills in project-management, team building and team processes at a multinational level,

*The major in Aircraft Design Engineering – ADE* - focuses on the process and tools required during all Design phases from Conceptual to Detailed Design.

*The major in Flight Test Engineering - FTE* - Concentrates on the Verification and Validation process, with a focus on defining tests and operating aspects.

## LEARNING APPROACH

### 1<sup>st</sup> semester:

Academic session, provided by ISAE's tenured professors and experts from the aerospace industry bringing current knowledge and experience, including:

- lecture, exercises,
- engineering and design study seminars,
- laboratory sessions
- written report and oral presentation,
- practical sessions,
- team work and team business games,
- a practical in-flight experiment,
- industrial visits (Airbus, DGA Flight Test, Liebherr...).

### 2<sup>nd</sup> semester:

Students are required to conduct a 4 to 6 months professional thesis or internship.

- with a company in the aerospace industry,
- in France or Abroad, supervised by the host organisation and ISAE-SUPAERO.

The thesis concludes with the submission of a report and an oral defence in front of a jury.

## CAREER OPPORTUNITIES

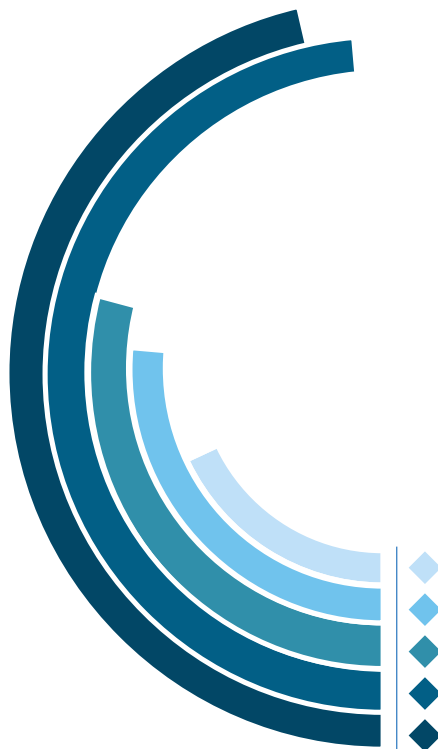
More than 1100 students from 55 countries have been trained over the last 30 years and now work as research engineers, designers, project managers, program managers, flight test engineers, and consultants, in companies such as Airbus, DGA Essais en Vol, AKKODIS, CAPGEMINI, MBDA, Dassault, ArianeGroup.

## CAREER OUTCOMES

- Test engineer
- Flight physics engineer
- Flight Test Analysis engineer
- Airworthiness engineer
- Flight performance engineer



## SYLLABUS



## COMON CORE

## Part 1: Structures and materials

- Aircraft Structures
- Materials for Aerospace Structures

## Part 2: Flight physics

- Aerodynamics
- Propulsion
- Flight Dynamics

## Part 3: Avionic and Systems

- Aircraft Systems
- Flight Control Laws
- Human Factors I

## MAJOR

## Flight test engineering major - FTE

- Experimental Flight Dynamics
- Flight Test Technics and Methods
- Flight experimentation
- Flight Test Final Project
- Human Factors II
- Measure and Sensors

OR

## Aircraft design engineering major - ADE

- Aircraft Design
- Aircraft Performances
- Aircraft Design - Final Project
- Computer Aided Design (CATIA)
- Multicultural Project Management
- Propulsion Systems
- Systems Engineering

## TESTIMONIES

## PABLO MARTIN GOMEZ

Class of 2020-2021  
Major Flight Test Engineering

After being trained as an Aerospace Engineer at the Polytechnical University of Madrid, I had my first Flight Test experience at INTA (the Spanish 'ONERA'). Since that moment, it was clear to me that I wanted to go further and focus my professional career in this field. Among the different options available, I was seduced by the idea of continuing my training in Toulouse, European capital of aeronautics, and especially at ISAE SUPAERO.

The key factors in that decision were **the possibility of having high-level theoretical and practical training, supported by industry experts and in an international environment.** This set of features could only be found in ISAE SUPAERO, so it was not difficult to make a decision!

The most important aspect I would highlight is **the practicality of the knowledge you learn: it is very focused on what you need to apply in your professional career.**

After finishing the 6 months of theoretical training and starting the internship, almost all my tasks as a Flight Test Engineer at Skydweller Aero (working with the SolarImpulse2 solar aircraft) were familiar to me. This is something you really appreciate when facing the labor market and companies value it.

This allowed me to continue at Skydweller when my internship ended and also helped me to return to Toulouse recently to continue my career at Airbus.

## ALICE FABRE

Class of 2020-2021  
Major Aircraft Design

Before completing this advanced master, I graduated from INSA Toulouse in environmental and process engineering. I did my final year project at Airbus working on clean aviation. At the end of this internship, and because of covid, I decided to do one extra year of studies to specialize some more in aeronautical engineering, as I knew very little and wanted to pursue my environmental work on clean aviation. I browsed the several advanced master programs of ISAE Supaero, and found the Aeronautical engineering - Aircraft Design program, that did not seem to be overspecialized in one topic, **but provided the basics and knowledge on every main aviation topic (systems, aerodynamic, design, flight control etc).** As my objectives were to gain general knowledge on aviation, this program was a perfect match.

During the semester, classes were divided between theory and workshops (almost 50/50) which was a good way to apply what had just been explained before. Lots of classes were given by industry specialists (professionals from big aeronautical companies), which was really an asset as they gave us an overview and information about their experience in their own sectors. Something personal that I appreciated **was the semester group project that I worked on and that was a study of hydrogen aircraft, which was completely aligned with my desire to work on the decarbonization sector.** I achieved my initial objectives thanks to this project as it has enabled me to be hired at ISAE Supaero for a year, and then eventually at Airbus, as Environmental engineer.