

Aeronautical Engineering majors Aircraft design /Flight test

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■ Objectives

The advanced master TAS AERO program leads to a one-year professionally-oriented master's degree with an emphasis on Aeronautical Engineering and Human Factors. It is composed of two major: one focusing on Aircraft Design process and Engineering (TAS AERO - ADE) the other focusing on Flight Test Engineering (TAS AERO - FTE).

The MS TAS Aero enables students to develop a high level of competence in engineering science, human factors, current technologies, design and management of aeronautical systems, or flight test methodologies.

The TAS Aero programs are highly multidisciplinary and aimed at developing engineering skills to easily enter the work world with great opportunities and significant chances of advancement on aeronautical projects, either in a research facility or in a company in a multinational environment.

The programs are specially designed for students starting immediately after the completion of their master and for industrial employees who have enrolled through their companies' continuing education programs.

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

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

A major in Aircraft Design and a major in Flight Test Engineering are offered concurrently.

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

The major in Flight Test Engineering - FTE - focuses on the tests to be conducted during aircraft and equipment development and certification.

This major FTE is particularly suitable for engineers with little or no prior experience in the field and also for those already involved in aeronautics who require further knowledge of the above concerns.

Graduates of this master are capable of working in flight test department to contribute to various kinds of flight testing (certification tests, envelope expansion, performances, handling qualities and aircraft systems...).

■ Learning approach

First semester:

Academic session of around 430h, provided by ISAE's permanent professors and experts from aerospace industry bringing current knowledge and experience, including:

- lectures, exercises,
- engineering and design study seminars,
- laboratory sessions,
- written report and oral presentation,
- practical sessions,
- team work and team business game,
- in-flight practical study and industrial visits (Airbus, CEAT, etc.).

Second semester:

Students have to conduct a professional thesis in aerospace industry or in laboratory, in France or abroad, supervised by a tutor from the host organization and from ISAE-SUPAERO. The thesis is concluded by the preparation of a report and an oral dissertation in front of jury.

Details in following pages

■ Organization

Head of program

- Prof. Éric POQUILLON
eric.poquillon@isae-supero.fr

Course duration

One year full time

Course start date

September

Location

ISAE-SUPAERO

Teaching language

English

■ 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, and consultants, etc.



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■ Syllabus

<i>Detailed Program</i>	<i>Hour</i>	<i>TAS AERO Aircraft Design</i>	<i>TAS AERO Flight Test</i>
STRUCTURES AND MATERIALS			
Aircraft Structures	50	✓	✓
Materials for Aerospace structures	15	✓	✓
FLIGHT PHYSICS			
Aerodynamics	40	✓	✓
Propulsion	20	✓	✓
Flight Dynamics	35	✓	✓
AVIONIC AND SYSTEMS			
Aircraft Systems	35	✓	✓
Flight Control laws	20	✓	✓
Human Factors I	45	✓	✓
FLIGHT TEST ENGINEERING			
Flight test technics and methods	30		✓
Human factors II	46		✓
Flight test experimentation	45		✓
Experimental Flight Dynamics	15		✓
Measure and Sensors	12		✓
Final project	17		✓
AIRCRAFT DESIGN ENGINEERING			
Propulsion Systems	20	✓	
Modeling for aeronautical structures	25	✓	
Computer Aided Design (CATIA)	18	✓	
Aircraft Performances	25	✓	
Aircraft Design	28	✓	
System Engineering	10	✓	
Multicultural project management	12	✓	



Testimonies

Why did you choose ISAE and apply for the advanced master «TAS Aero-FTE»? What were your objectives?

|| I have worked in aerospace industry for over 15 years in India, Europe and USA. I had started my career in Indian Defence Organisation, and was also the Program Manager of India's first Regional Jet program (NCAD). In recent years, I was deployed to Military Flight Test environment at Indian Air Force Test squadrons. Therefore, I came to study at ISAE SUPAERO to develop my expertise in the area of Flight testing & certification particularly of Civil aircraft. I would like to thank Mr Philippe Galaup for recommending me the FTE course; his advice was very well timed and helped me make a decision to come to the school. About 10 years ago, I also graduated Masters of Aerospace Engineering from Delft University of Technology (Netherlands), and did internship at ETH Zurich Switzerland.

According to your experience, which are the strong assets of the Master you did?

The rigorous program was imparted by the Test Pilots, Flight Test Engineers and Industry Experts from Airbus/Dassault Aviation/EPNER/DGA CEV/ONERA/Airbus Helicopters. As an FTE, we flew 4 types of aircraft at 3 different airfields with 4 Pilots. We performed various Flight tests Experiments that included Airspeed calibration, Aircraft performance, Handling qualities, Acceptance and Evaluation flight.

Apart from the flight experiments, the ground courses were of high scientific caliber and demanded academic excellence; which was aimed to bring out the best in us. Thanks to Prof Eric Poquillion (the Head of FTE) for his rich expertise in Flight testing and certification, who himself is a graduate from EPNER (French Test Pilots School).

I am grateful to Supaero that I have an exciting stage at CFM LEAP Flight Test Team to support the flight test campaign of Airbus A320 NEO program at its flight test center in Toulouse.

My experience wouldn't be complete if I don't mention about the the impressive Sports facilities and multitude of clubs at Supaero. I particularly enjoyed my time at Football, Swimming, and Ping-Pong club

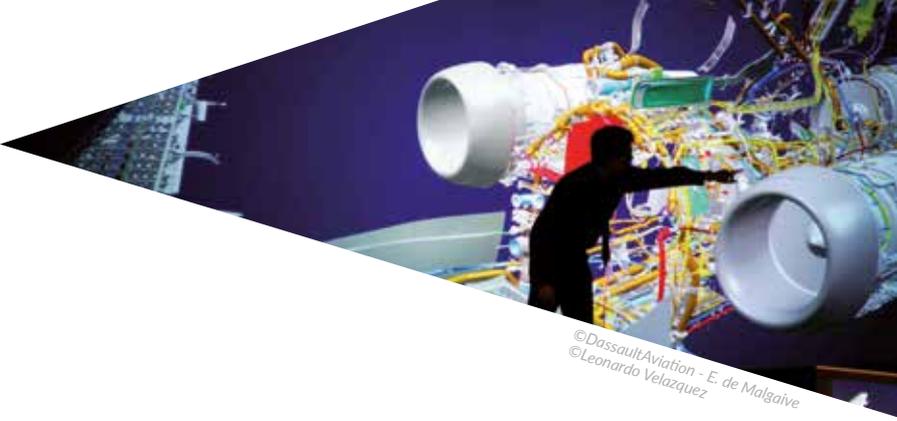
Which are your career plans?

I am responsible for supporting Build lines, Flight Test & Qualification of HAL Helicopters for Military application. I find my job quite interesting because on one hand I have the management responsibility to contribute to Company's growth, and on the other hand I support the development activities as a Flight Test Engineer. I owe this to the rigorous training at ISAE SUPAERO which helped me get this unique position.

Similarly, last year I had "once-in-a-lifetime" opportunity to work in Safran Aircraft Engines for A320neo Flight Test & Certification campaign at Airbus Flight Test Center in Toulouse France. Further, my career plan is to continue to contribute to the development & testing of novel aeronautical products with focus on efficient Engines.

JITENDRA SINGH
India, Director of Engineering, Safran Helicopter Engines - India, graduated in 2016

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■ Admission procedures

Advanced Masters

Academic requirements

A master's degree, or an equivalent degree in science or engineering (or in management for advanced masters in management), or bachelor degree completed by 3 years of professional experience

Application website :

<http://admissionsmasters.isae-supaero.fr>

Selection and admission

Selection and admission are made by an admission committee :

Possible interviews can be organized if necessary

Deadlines for application:

Several admission committees scheduled from January to July, see schedule on our website

Language requirements for Masters in English

TOEFL (IBT)	or	TOEIC	or	IELTS	or	CAE/FCE
						
85 points		785 points		6.5 points		170 points

Language requirements for Masters in French

Language qualification requested

Score B2-Common - European Framework of Reference for Languages

■ Your contacts

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