

# Helicopter, Aircraft

# and Drone Architecture (HADA)

MS HADA



## Objectives

The Advanced Master "Helicopter, Aircraft and Drone Architecture (HADA)" is designed and developed by ISAE-SUPAERO and Airbus Helicopters. This 2-semester program provides high-level of engineering and technical competences for careers in aircraft, helicopter and drone business world.

This new program will offer the acquisition of the basic skills required for aeronautical engineers (architecture, certification and structures) and specific skills to identify problems, generate alternatives, choose and implement solutions on aircraft, Helicopters and drones. These latter (drones) will be developed to represent a significant part of the future aerospace business world. Industrial, regulatory and logistical challenges will therefore emerge. As a result, the future aerospace engineers interested by engaging in these innovative projects will need to mobilize and developed new skills and expand their knowledge fields. This program offers a complete training from systems to structures through aerodynamics, flight dynamics and certification while encouraging and taking into account the diversity of the profiles of the selected students.

By adapting to the updated required skills, this ADVANCED MASTER® is a high level of training, with a degree recognized by the professional sector, and adapted to the present and future aeronautical engineering.

## Organisation

### Heads of Program:

Prof. Anis HOR

**E-mail:** anis.hor@isae-supaero.fr

Prof. Jean-Marc MOSCHETTA

**E-mail:** jean-marc.moschetta@isae-supaero.fr

**Duration of studies:** One year full time

**Beginning of classes:** September

**Location:** ISAE from September to December, Airbus Helicopters premises (Marignane) from January to February

**Teaching language:** English

## Learning approach

**First semester:** academic session from September to February, provided by permanent professors of ISAE and experts from aeronautical industry giving their current knowledge and experience (Airbus Helicopters, Airbus Group, Safran/Turbomeca, Thales, etc.). Including: lectures, tutorials, and practical sessions.

**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 Organisation and from ISAE. The thesis is concluded by the preparation of a report and an oral dissertation in front of jury.

## Syllabus

### Aircraft structures, Aircraft architecture and certification – 120 h

Aircraft architecture  
Certification  
Computer Aided Design  
Structures

### Fixed-wing Aircraft – 130 h

Engines and powerplant  
Aircraft linked-systems  
Avionics systems  
Flight dynamics

### Helicopter – 125 h

Helicopter: Aerodynamics and flight qualities performance  
Helicopter dynamics  
Helicopter construction materials and techniques  
Helicopter Systems  
Helicopter: Prototypes, tests and production quality assurance

### Drone – 120 h

Drone systems: design and mission  
Payload and sensors for UAV's  
Drone safety and airworthiness  
Drone guidance and navigation  
Drone operation and human factors  
Neutral network for control and diagnostic

## Career opportunities

This programme prepares attendees to a wide range of professional opportunities from design, certification and operations of civil and military aircrafts, drones and helicopters in France and overseas.

### Companies recruiting our students

Altran, Airbus Group, Airbus Helicopters, Safran-Turbomeca, Thales, SAGEM, Dassault Aviation, Gendarmerie Nationale, SONAIR (Angola), Helibras (Brazil), AVIC (China) HAL (India), Pawan Hans Helicopters Ltd (India), Airbus Helicopters Mexico, Air Force of Algeria, Navy of Brazil, Air Force of Chile, Air Force of India, Pakistan Army, Air Force of Tunisia, Sauber f1 team...

## TESTIMONIES

**Tanguy DENANTE, France, Aero Designer at Sauber F1 Team, Graduated in 2014**

*Why did you choose ISAE and apply for our master ? What were your objectives ?*

When I was studying in engineering school, I worked during 6 months as a trainee at the Rotor design office of Airbus Helicopters. After that great experience, I was determined to work in the Helicopter industry as an engineer. That is why I decided to apply to the ISAE master, in order to have the strongest background as possible in helicopter engineering before applying to a job offer.

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

In my own opinion, the strongest assets of the Helicopter Engineering master are : the quality of the courses which are taught by teachers from ISAE and high specialists from several companies, the partnership with Airbus Helicopters and the proximity with the staff, the factory and the helicopters, the fact that the master is taught in English.

*Which are your career plans ?*

As a graduate, I can confirm that following the Helicopter Engineering Master at ISAE is definitely a huge opportunity for any engineer to improve his skills. On my side, the Helicopter Engineering Master was a great advantage to be accepted in the company where I work nowadays. At the moment, my plan is to continue to work in Motorsport, but we never know what could happen in the future !

**Nicolas GENTY-PRISCAL, Application Engineer at NTN-SNR, Aerospace Business Unit, Graduated in 2013**

*Why did you choose ISAE and apply for our master ? What were your objectives ?*

I choose ISAE school because of the advanced master «Helicopter Engineering» which was very unique. I was and still am fond of helicopters and this was a great opportunity to obtain a specific degree in helicopter engineering field. My objectives was to be hired in a foreign helicopter company by presenting a difference compare to other engineers.

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

The advanced master «Helicopter Engineering» entirely in English was very well thought and organized. More than 15 different subjects from basic to some very specific ones only applicable to helicopters.

The common core syllabus in cooperation with the maintenance master also was interesting in order to get strong basis in aeronautical technique and a good general culture of this world. Finally, the best asset of the master was the 5 weeks training session in Airbus Helicopters (Eurocopter at that time) called «Specific Helicopter Training».

*Which are your career plans ?*

Currently, I use everyday what I have learnt in the master for my job. My goal is to obtain more and more experience in order to improve my skills and access to a technical expert job in a aeronautical office design. My greatest wish will to become a technical expert in a Bureau of Investigation for Civilian Aircraft Safety, but that will be for later!

**Alix ANDRIEU, France, Flight Test engineer Eurocopter, Graduated in 2008**

During my graduate studies at aeronautical engineer school, my dream was to learn about helicopter however all lessons had been on airplane so I couldn't have theoretical lessons on helicopter working. So I inquired about possible postgraduate courses in other engineering schools or universities and I found this Advanced Master in Europe at ISAE.

After 5 years of study I wanted to start my first job but the Master was the only way to fill my wish to work in Helicopter industry. So I applied for and I could do it.

Thanks to this Master I discovered the helicopter world. This Master gathers all fields regarding helicopter. That means materials, design, avionic, arming, aerodynamic, vibration, systems, flight performances, etc.

One of the main assets of this Master is the involvement of Eurocopter. Parts of lectures are taught by engineers, providing me with their expertise, giving as well a perception of the working of company and different existing jobs.

Now I am working in this leader company of helicopter conception and manufacturing. I joined the flight test department after graduation in September 2008.

After I have been studying this Master program for one year, I could say I feel being a better engineer than without do it».

# Common ISAE's admission procedures

## Advanced Masters

### Academic requirements

Applicants must have a Master degree, or an equivalent degree in science, or engineering, or a bachelor degree with 3 years of professional experience at least.

### Tuition fees 2017:

	EU		Out of EU	
	reduced tuition fees <sup>1</sup>	tuition fees	reduced tuition fees <sup>2</sup>	tuition fees <sup>3</sup>
HADA	7 500 €	12 500 €	12 500 €	18 000 €

<sup>1</sup> for students graduated in the year of enrollment or the year before and with no professional experience

<sup>2</sup> for individual applicants

<sup>3</sup> fees for public agencies and private companies available upon request from Philippe Galaup at: [philippe.galaup@isae.fr](mailto:philippe.galaup@isae.fr), Head of recruitment and Contractual Relations

Possibility of studies funding by the Midi-Pyrénées Regional Council for French and UE unemployed applicants.

## Selection and admission

### Admission to ISAE's master at:

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

### Selection and admission are made by an admission committee:

> possible interviews can be organized if necessary

### Deadlines for application:

> several admission committees scheduled from February to July 2017, see schedule on our website: [www.isae-supero.fr](http://www.isae-supero.fr)

### Application fees:

> 70 € (non-refundable)

## Language requirements

### Language qualification requested:

> TOEFL (IBT): 79 points (Inst. code: 9820)

> or TOEIC: 785 points

> or IELTS: 6.5 points

> or CAE.

## Your contacts at ISAE

**Philippe GALAUP**, *Head of recruitment and Contractual Relations* - Phone : +33 (5) 61 33 80 27

**Laurence BALLARIN**, *Senior Admission Advisor* - Phone : +33 (5) 61 33 80 22

**Marie GUIBBAL**, *Senior Admission Advisor* - Phone : +33 (5) 61 33 80 28

**Mikael LE ROUX**, *Senior Admission Advisor* - Phone: +33 (5) 61 33 80 13

[info-masters@isae-supero.fr](mailto:info-masters@isae-supero.fr)

# ISAE in few words

ISAE-SUPAERO is a world-class higher institute for aerospace engineering education and research. Nowadays with a student corpus of over 1600, ISAE-SUPAERO is one of Europe's largest Aerospace Institute offering graduate and postgraduate programs. Yearly, ISAE-SUPAERO awards around 20% of master's degrees in Europe in aeronautics and space field. ISAE-SUPAERO develops its worldwide reputation on the prestige of its master's programs, the fame of its teaching staff, or the excellence of its research but also on the high-value of its graduates, their skills in engineering or management, as well, their capacity to evolve within a very high-technology environment, their enterprising mind and international opening..

## Identity card



**Name:** Institut Supérieur de l'Aéronautique et de l'Espace (ISAE).

**Legal Status:** Public Institution of higher education and research.

**Endorsements and awards:** CTI agreement of the two «Diplôme d'ingénieur», Conference des "Grandes Écoles" for postgraduate Advanced Masters and "Ministry of Higher Education and Research" for Masters of Science.

**Faculty:** 100 professors and researchers.

**Employees:** 400.

## A campus fully renovated in 2015

ISAE-SUPAERO campus is located in Toulouse, along the Canal du Midi (UNESCO world heritage).

It is composed of:

- » wide range of sports facilities including swimming pool, tennis and squash courts, sports hall, football and rugby fields, climbing wall and fitness room,
- » 6 students halls of residence : 1000 rooms and studios apartments, all connected to high-speed network,
- » a restaurant.

The campus is located in the Ranguel scientific complex, close to:

- » ONERA French aerospace research centre
- » CNES - French space agency
- » 2 CNRS (National Center for Scientific Research) laboratories
- » University and engineering schools.

## Key figures

**1** «diplôme d'ingénieur» ISAE-SUPAERO in French

**1** Master of Science ISAE-SUPAERO in English

**1** «diplôme d'ingénieur par apprentissage»

CNAM-ISAE (co-op master program)

**15** Advanced Masters including 10 in English

**5** Masters in French

**6** PhD Programs

More than **1600** students including **1400**

masters and more than **220** PhDs

**81** international cooperation agreements



a set to facilitate settlement of new students in Toulouse city.

*Including: bank account opening, housing insurance, accommodation booking, immigration formalities, public transportation card, SIM card, Guided tour of Toulouse city*