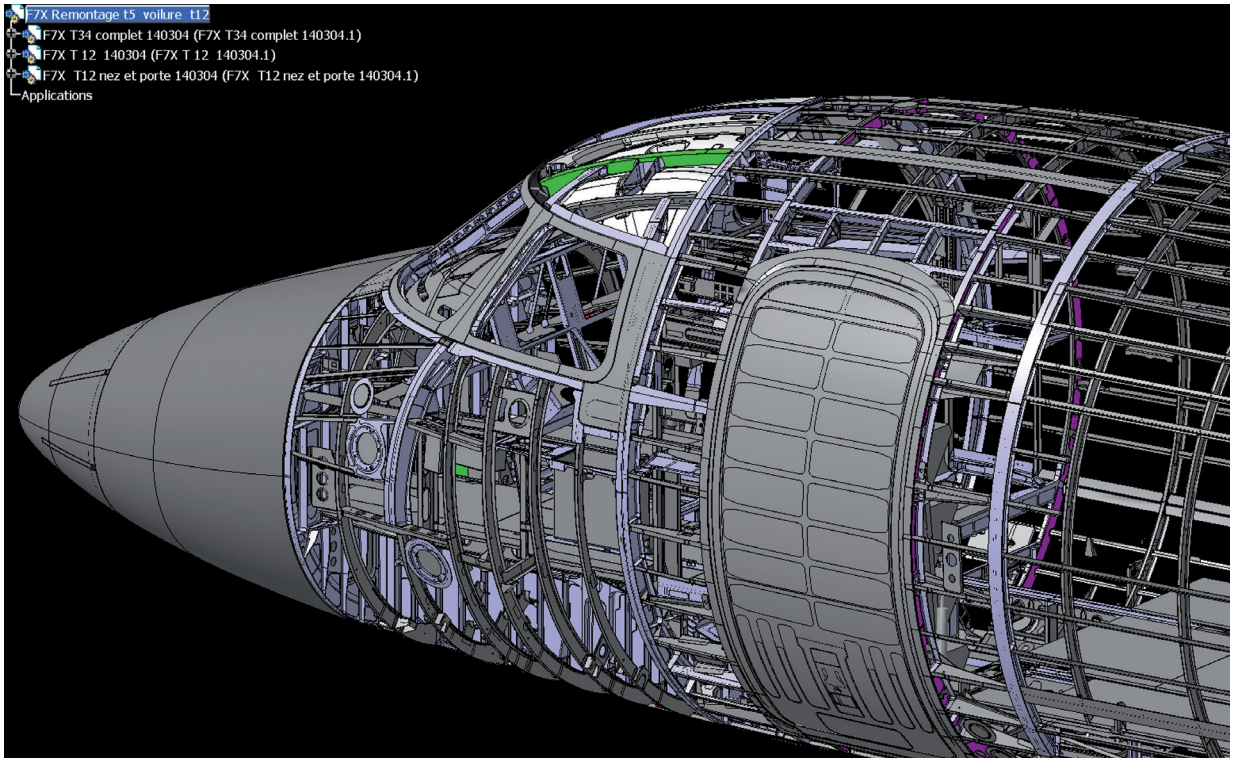
MS AES Aeronautical and Space Structures



Objectives

In an increasingly competitive international context, the research on innovative materials combined with optimization of calculation methods for structures, and their statistical, dynamic and thermal certification are major assets for industrial architects in the aircraft and spacecraft sectors. The «Aeronautical & Space Structures » prepares engineers with a future career in design, research and development, certification, testing and qualification, in-depth, multi-disciplinary know-how in mechanical engineering applied to structures. This Master program is the european reference in the field.

The program aims to grow expertise in numerical calculation for the most advanced structures, knowledge in materials as well as an understanding of their interferences with the environment (in particular loads and fluid-structure interactions).

The dynamics of flexible structures, modeling and active and passive structural control of complex elements are the core focus of this masters program.

The goal of the ADVANCED MASTERS ® program is to train specialists in the field of design, optimization and certification of light structures who have mastered methods of modeling and analysis of aircraft structures and space vehicles in the industrial context.

Program organization

Head of program: Prof. Yves GOURINAT

Email: yves.gourinat@isae-supaero.fr

Duration: one year, full time program

Start time: early September

Where: ISAE-SUPAERO

Language: delivred in English.

Educational method

First semester: some 351 hours of courses delivered from September to March on the premises of ISAE by permanent ISAE-SUPAERO faculty and visiting lecturers from industry providing the latest industrial expertise including: lecture courses, design offices, lab work, numerical simulations, CAD, lab sessions, industrial visits.

Second semester: completion of a professional thesis in a company or a laboratory, in France or abroad for four to six months, validated by the thesis defense.

Course program

AEROSPACE STRUCTURES: METHODS & TOOLS FOR ENGINEERING & DYNAMICS: 52 h

- Flight dynamics: an introduction
- Aerodynamics: an introduction
- MATLAB standards
- Structural dynamical control: an introduction
- Structural shells-analysis & modeling
- Advanced numerical models.

AEROSPACE SYSTEMS ARCHITECTURE: 109 h

- Aerodynamics loads
- Aircraft structural loads
- Architecture & structure of launch vehicles
- Helicopters: architecture & design
- Satellites: architecture & structures.

AEROSPACE STRUCTURES: DYNAMICS & PHYSICS: 114 h

- Finite elements: application to aeronautical structures
- Flexible aircraft: dynamics & aeroelasticity
- Dynamical active control of structures
- Advanced computation of aircraft structures
- Advanced structural dynamics.

AEROSPACE PROGRAMS & TECHNOLOGIES : 56 h

Aerospace materials: experimental approach

- Aerospace materials: rheology & durability
- Computer Assisted Design & Drawing
- Commercial aircraft: strategies for design & innovative programs

TIMES Project : 20 h

Team Innovative Management for Evolved Strategies

Career opportunities

This Masters program, unique in France, has trained over 120 engineers. Today, graduates of the program are working as research or design engineers in international companies in the aeronautics, space and mechanical engineering sectors.

The advanced scientific level of the MS AES program also paves the way for career opportunities in research in solid mechanics and structures.

Companies which hire our students:

Altran, Astek, Airbus Group and its subsidiaries, Aéroconseil, Aerazur, ASSYSTEM Etudes, ATKINS, AXS Analyse de Structures, Air France, Bertrandt SA, Dassault Aviation, Dassault Falcon Jet, PSA, Latécoère, Renault, Seditec, Segula, Sodern, Sagem, SAFRAN Snecma, Snecma Propulsion Solide, SAFRAN, Messier, SAFRAN Turboméca, Transiciel, Safran Engineering Services, SEGIME, Sogeti High Tech, Thales, ESA/ Astec, Thales Alenia Space, Renault, Clairis Technologies, DLR (Germany),...

Common ISAE-SUPAERO's admission procedures

Academics requirements

Candidates must have a Masters degree, an equivalent scientific degree or an engineering degree or they must have a Masters degree with at least three years professional experience.

2018 Tuition fees:

	EU		Hors EU	
	Students from European Union Reduced tuition fees[1*]	Students from European Union Tuition fees	Students from outside the European Union Reduced tuition fees[2*]	Students from outside the European Union Tuition fees[3*]
AES	8 000 €	13 000 €	13 000 €	19 000 €

[1] For students who have earned their degree the year of registration or the preceding year and who have no work experience
[2] For individual candidates
[3] Fees for public organizations and private companies available on request from Philippe Galaup à : philippe.galaup@isae.fr, Head of Recruitment and Contractual Relations

French and European job seekers may obtain a grant from the Occitanie Region.

Selection and admission's procedure

Submit an application at:

http://admissionsmasters.isae-supaero.fr

An admissions jury handles selection and admissions:

- an interview may be required

Application deadline:

- several admissions juries are scheduled from February to July 2018. See the admissions calendar on our website: www.isae-supaero.fr.

Application fees:

- 75 € (non-reimbursable)

Language requirements

English:

> TOEFL (IBT): 79 points (Inst. code: 9820)
> ou TOEIC: 785 points
> ou IELTS: 6.5 points
> or CAE.

Your contacts at ISAE-SUPAERO

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-supaero.fr

ISAE-SUPAERO 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.

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 **200** PhDs

85 international cooperation agreements

Identity card

ISAE-SUPAERO 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 lifely campus

ISAE-SUPAERO campus is located in Toulouse, **European Capital of Aerospace**, 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 housing units, all connected to high-speed network, a restaurant.

The campus is close to:

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

TOULBOX

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

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