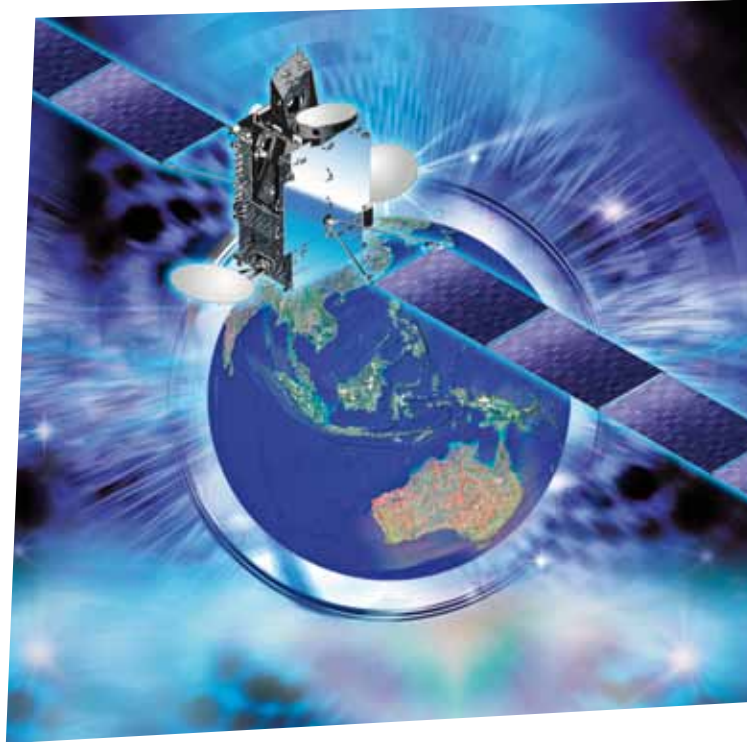


Space Systems Engineering

MS TAS Astro



Aims

The TAS Astro - Space Systems Engineering Specialized Master degree program is a one-year professional course of study. The TAS Astro specialized Master allows students to develop a high level of competence in engineering science, current technology, engineering design and management of space systems. The TAS - Astro program is highly multidisciplinary and is aimed at developing engineering skills to easily enter the work world with great opportunities and significant chances of advancement on aerospace projects, either in a agency or in a company in a multinational environment.

The program is designed for students starting immediately after the completion of their graduate degree 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 specific skills applied to space sector, in design development, space systems engineering and management of space projects,

- > to acquire high competences related to technical aspects, international economical and legal concerns of space projects.

Organization

Head of Program: Prof. Bénédicte ESCUDIER

E-mail: benedicte.escudier@isae.fr

Duration of studies: One year full time

Beginning of classes: September

Location: ISAE, Campus SUPAERO

Teaching language: English

Pedagogical approach

First semester: academic session of around 410h, provided by ISAE's permanent professors and various experts bringing current knowledge and experience from research center (ONERA), Space agencies (CNES, ESA), or European aerospace industry (Thales Alenia Space, Astrium/Space Transportation, Astrium/Satellites, Safran/ SNECMA, etc.).

Advanced Master in engineering

Accredited by the Conférence des Grandes Écoles

This first semester includes:

- > lectures, exercises, labs,
- > engineering and design study seminars,
- > laboratory sessions,
- > written report and oral presentation,
- > practical sessions, team work and industrial visits.

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

Part 1 - Missions and Systems - 140 h

Space environment and effects
Orbital Mechanics and mission analysis
Dynamics and attitude Control
Reliability, Availability, Maintainability, Safety of space systems
Design of Launch Vehicles and Space Systems
Space communications
Operations and manned space missions
Navigation and localization satellite systems

Part 2 - Space projects environment - 120 h

Examples of space projects
Space economics and law
Quality seminar
System engineering for space systems - Case study
Integrated team project

Part 3 - Satellites and Systems - 150 h

Space propulsion
Satellite engineering
Digital control and real-time control by computer
Study case: attitude control of satellite
Advanced control
Guidance and control of satellites
Guidance and control of launch vehicles
Electrical architecture of satellites
Data processing architecture of satellites and on-board management

Part 4 - Conferences and seminars

Visits of companies: Intespace, ASTRIUM/ST, ONERA.

Part 0 - Harmonisation

A harmonization program can be offered to students in accordance with their initial education background, in particular in signal processing and automatic control.

Career opportunities

This TAS Astro Specialized Master program leads students to technical employment either in international industries or in research centers in aerospace world. Current position are: Project Managers of space systems, Experts in industry or public research laboratories, or in Consulting and services companies, etc.

Companies recruiting our students

Altran, EADS Astrium, EADS Apsys, Aéroconseil, Astek, Atos Origin, Bertin, Eutelsat, Eurilogic, GIST, Saipem, Seditec, Safran, Sopra Group, Transiciel, Thales Alenia Space, CNES, ESA, CTA (Brazil), Inpe (Brazil), DLR (Germany), Instituto Mexicano de Comunicaciones (Mexico), GTD Sistemas de Información (Spain), Hispasat (Spain), Aerospace Computing Inc/AMES (USA),...

WITNESSES

Mireia JOYA – Spain, Graduated in 2010

The great quality of the ISAE's master has helped me to shape my future the way I imagined. It has been a unique learning experience not only because of the numerous lecturers from different areas of the Space Industry we had but also because it brought me the opportunity to participate in a very interesting project at EADS Astrium. I will always remember with great pleasure the friendship I made with students from all over the world. After the master graduation I joined ALTRAN Toulouse as space thermal engineer».

Chloé DEFREVILLE – France, Graduated in 2011

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

ISAE is the best engineering school in space domain and localized in Toulouse near the big space centers (CNES, Astrium, ONERA, Thales). The diplom is well recognized.

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

The multiplicity and exhaustivity of the studied fields, the high qualifications of our teachers and speakers coming from the best firms all over France, the subject of our class project and the involvement of nearly every student

Which are your career plans ?

Working on big space project like for the CNES.

Common ISAE's admission procedures

Advanced Masters in engineering

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.

Possibility of studies funding by the Midi Pyrenees Regional Council for French and UE unemployed applicants

Tuition fees : 12500 €

French and European Students:

> 6500 € (students graduated in the year of enrolment or the year before and with no professional experience).

Selection and admission

Admission to ISAE's master at:

<http://AdmissionsMasters.isae.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 March to July 2012, see schedule on our website: www.isae.fr

Application fees:

> 65 € (non-refundable)

Language qualification requested

- > TOEFL (Paper-based): 550,
- > TOEFL (IBT): 79,
- > TOEIC: 750,
- > IELTS: 6.0,
- > CAE Cambridge, ...

Your contacts at ISAE

- > **Laurence BALLARIN**, Senior Admission Advisor
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Phone : +33 (5) 61 33 80 22
- > **Marie JENTET**, Senior Admission Advisor
marie.jentet@isae.fr
Phone : +33 (5) 61 33 80 28
Web : www.isae.fr

ISAE in few words

The "Institut Supérieur de l'Aéronautique et de l'Espace" (ISAE) was created in 2007 from the merger of the two prestigious French postgraduate schools of engineering, SUPAERO and ENSICA. Today, ISAE, is a world-class higher institute for aerospace engineering education and research. Nowadays with a student corpus of over 1500, ISAE is one of Europe's largest Aerospace Institute offering graduates and postgraduates programs. Yearly, ISAE awards around 20% of master's degrees in Europe in aeronautics and space field. ISAE 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

- > 2 Graduate Engineering Programs: SUPAERO and ENSICA
- > 15 Specialized Masters including 11 in English
- > 3 Masters of Science
- > 6 Research Masters
- > 6 PhD Programs
- > 1500 students (1300 masters and 200 PhDs more or less)
- > 160 international cooperation opportunities
- > 50 academic and research partnerships

Identity card

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

Founded in 2007 - as the result of the merging of SUPAERO (1909) and ENSICA (1945)

Legal Status: A large public institution of scientific, cultural and vocational missions

Trustees: Délégation Générale pour l'Armement (DGA) [French Defence Procurement] - Ministry of Defense

Endorsements and awards: CTI agreement of the two Graduate Programs, Conference des 'Grandes Écoles', for postgraduate specialized masters Ministry of Higher Education and Research for Masters of Science

Staff: 420 permanent staff



Contacts ISAE

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