

System Engineering

Accredited by the Conférence des Grandes Écoles



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Aims

Systems Engineering is an interdisciplinary field of engineering integrating all disciplines and technologies into integrated team from development, to design, up to operation and disposal of competitive and complex systems.

Systems Engineering approach is the capacity to federate and control various, interweaving and complementary engineering activities. This approach goal is to deliver satisfying systems, on-time, within expecting budget, with the level of quality and performances meeting requirements of an open and competitive market. System Engineering Process implements technical processes (requirement engineering, design, integration, verification, validation, etc.) as well as project management processes, agreement processes and enterprise processes.

The Systems Engineering Master degree program is a one-year professional course of study, designed in partnership with the industry. This program aims at providing worldwide industry with skilled professionals in System Engineering able to specify, design, deploy and maintain competitive and complex systems, fit to purpose, in various industrial sectors: space, aeronautics, air traffic control, land transport systems, maritime transport, health industry, energy, communication systems, etc.

Organization

Head of Program:

Prof. Stéphanie LIZY-DESTREZ

Phone: + 33 (0)5 61 33 80 97

E-mail: stephanie.lizy-destrez@isae.fr

Duration of studies: One year full time

Beginning of classes: September

Location: ISAE, Campus SUPAERO

Teaching language: English

Pedagogical approach

The one-year course is split into 2 semesters in ISAE premises - lectures, integrated team project, etc. - and 4-5 months of internship.

First semester: academic session of around 440h, provided by ISAE's permanent professors and experts from industry bringing current knowledge and experience, including: Lectures, tutorials, industrial study cases. And 130h devoted to the Integrated Team Project run all along the semester.

Second semester: students conduct a professional thesis within an aeronautical industry or organisation, in France or abroad and 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

Teaching part (First semester) – 584 h

ISAE Information System User Introduction

System Engineering Introduction (SEI)

Project Technical Management (PTM)

System Engineering Data Technical Management (SEDTM)

System Modelling and Analysis (SMA)

System Dependability (SD)

System Performance Assessment & Management (SPAM)

Optimise, Decide, Justify, Verify & Validate: The essential system engineer toolbox (ODJVV)

Requirement Engineering (RE)

System Design and Architecture (SDA)
System Assembly, System Integration, System Verification & System Validation (S4AIVV)
Integrated Team Project (ITP)
Study Case : System Engineering and Certification of the A380 (A380)
Study Case : System Engineering of Space Systems (SESS)
System of Systems (SoS)
Integrated Logistic Support (ILS)

Career opportunities

For Students with open mind, who want to Master things generally, who do like working in integrated team, who like challenges, who are convinced that we can have fun while working, this Master will offer huge job opportunities in Systems Engineering.

Systems Engineering is now a real and permanent concern for any business players, from Major Governmental contractors, to equipment manufacturers, to prime contractor integrating systems, and services companies such as Airlines for instance.

Systems Engineering jobs are characterized by many disciplines:

- multidisciplinary - mechanics, electronics, information technology, etc,
- strong interface with project management,
- permanent concerns all along the life cycle of a system.

Need of Systems Engineering engineers is increasing for both industries developing, producing and maintaining large complex systems (aircraft, ships, military and defence systems, cars, etc.) and other industries developing and producing smaller high technology products (cameras, mobile phones, printers, computers, etc.). This Master program offer students great opportunity to join Engineering Systems Team within industries in different economic sectors.

Companies recruiting our students

EADS Airbus, Dassault Aviation, EADS Defence and Security System, EADS Astrium, Arianespace, Aéroconseil, Seditec, Altran, Hispano Suiza.

Industrial Scholarships

THALES has selected the Specialized Master System Engineering for its **THALES Academia** program: a partnership between Thales group, leading French engineering and business schools and the Ministry of Foreign Affairs. Every year scholarships are offered to students from **Brazil, China, India and Russia.**

www.thalesgroup.com/extra/academia/index_en.htm

Witnesses

Interview, Dorothée CHARLES, advanced-UAV System Engineer - EADS, Graduated in 2006,

"I chose to perform the SEN Master of ISAE (SUPAERO) because I knew that it will train people to be very quickly operational in an industrial companies and I was right. Most of our teachers came from the industrial world and trained us with pragmatic methodologies and issues. Now, I lead all the Tools and Processes activities on a European military project for EADS Defence and Security called Advanced-UAV. I'm sure I would not have been capable of performing these activities so quickly without this Master".

Interview, Thomas BOUTARD, advanced-UAV System Engineer - EADS, graduated in 2007

I chose performing the SEN master in ISAE (SUPAERO) because during an internship in engineering office, I had been confronted with systems engineering tools and methods. My strong interests was to improve my knowledge in this domain so that's why I applied to this one-year post-graduate specialized master..

A great interest is that during the one-year studies, students can participate to AFIS conferences and meet system engineering experts to exchange and to develop professional network.

The master program gives a solid working methodology offering fast operational and efficient skills whatever industry chosen by students after graduation. And it is important to notice that System Engineering is currently the expertise preferred by industry.

I work now on Advanced-UAV program for EADS Defence & Security, where I am performing the conceptual data model of the ground segment.

Admission 2010

Common ISAE's admission procedures

Postgraduate Specialized Masters in engineering

- SM AMS - SM ASAA - SM EMS - SM HE - SM SCS - SM SEN - SM TAS Aero - SM TAS Astro
- MS EAS - MS SAS - MS SPA

Tuition fees 2010-2011: 12 000 €.

French and European Students: 6000 € (students graduated in the year of application or the year before, and with no professional experience).

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.

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 April to June 2010,

Application form to be downloaded at www.isae.fr

Application fees: 65 € (non-refundable).

Complete application files to be sent: Institut Supérieur de l'Aéronautique et de l'Espace - Direction des masters et mastères spécialisés - 10, avenue Édouard-Belin - BP 54032 - 31055 Toulouse Cedex 4 – France

Language requirements for Masters in English

Language qualification requested : TOEFL 550 (paper-based). Except if applicant's first language is English or total instruction of Bachelor or Master degree has been provided in English.

Other admission procedures

MS IEVex

Specific admission process through the French Ministry of Defence, contact us for more detailed information.

MS MGP

Selection and admission organized by HEC:

www.hec.edu/Specialized-Masters

Contact us for more detailed information.

MS IMF

Selection and admission organized by ESC Toulouse:

www.esc-toulouse.com

Contact us for more detailed information.

Contacts

Michel CHAUVIN, Deputy Director of Masters Programs: michel.chauvin@isae.fr - Phone: +33 5 61 33 80 27

Marie JENTET, Information and Marketing Manager: marie.jentet@isae.fr - Phone: +33 5 61 33 80 28

Web: www.isae.fr

ISAE

The "Institut Supérieur de l'Aéronautique et de l'Espace" (ISAE) was created in 2007 from the merger of the two prestigious French graduate and 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 1600, 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.

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

Key figures

2 Graduate Programs: SUPAERO and ENSICA

17 Specialized Masters including 12 in English

2 Masters of Science

9 Research Masters

6 PhD Programs

1600 students

160 international cooperation opportunities

50 academic and research partnerships

Contacts ISAE

Email: communication@isae.fr

Address : ISAE - 10, avenue Édouard Belin -
BP 54032 - 31055 Toulouse cedex 4 - France

Phone : 33 (0)5 61 33 80 80 - Fax : 33 (0)5 61 33 83 30

Web site: www.isae.fr



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