SM-SEN

System Engineering

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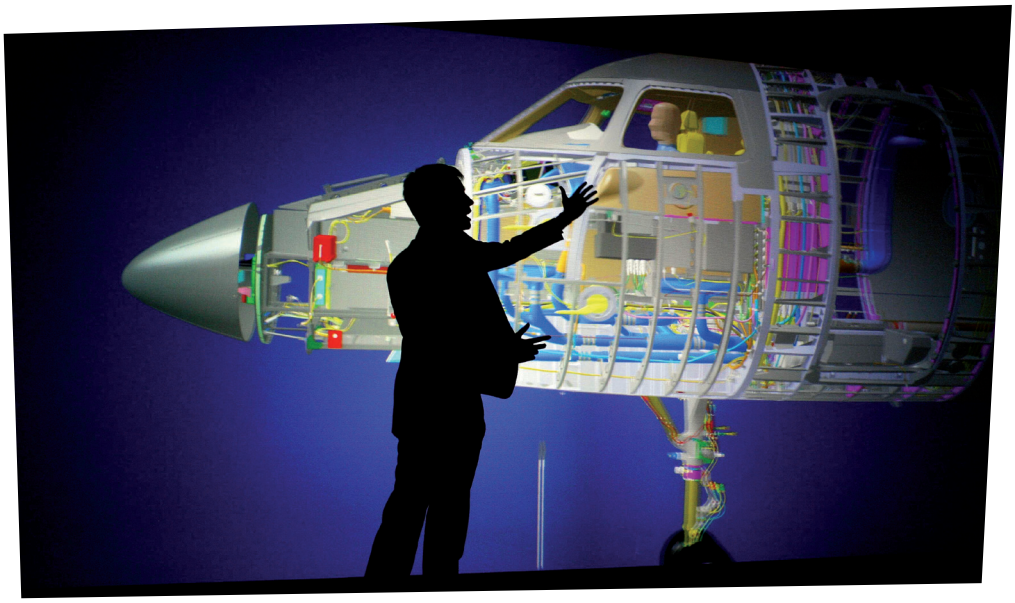

Aims

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 an 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

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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 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

Teaching part (First semester) – 646 h

Part 1: Academics (521h)

ISAE Information System User Introduction
General Aircraft Technical Overview
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 Logistic Support (ILS)
Study Case : System Engineering and Certification of the A380 (A380)
Study Case : System Engineering of Space Systems (SESS)
Study case : System Engineering at Dassault Aviation (DAV)
System of systems (SOS)

Part2: Integrated Team Project (ITP) (125h)

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, Thales Alenia Space

Witness

Tianjiao Li, China, Gratuated in 2010

« I am working in Thales China as a PPC (Processing, Computing, Cognitive) Engineer in R&D (Research and Development) after graduated from SEN, one master of ISAE.

My dream was to be an engineer since my childhood, so I chose aeronautics as my major of bachelor. After four-year study, I was lost in so much technical issues and mathematics and physics quotations. I want to be an all round person in my career path, who is not only good at technical issues but also adequate to marketing, sales, product application etc. Therefore I was desirable to study System Engineering which integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation.

I was so luck to be accepted by ISAE, whose academic environment is so professional and the faculties are so responsible. In SEN, I learned the practical knowledge given by the professional teachers who are long years in the industry. The teachers are from each domain, who taught us by the easily understandable ways with their rich experience. All the topics were cutting edge in industry, which are innovative and interesting. Besides that, I loved so much of the atmosphere of SEN, where the friendships were very strong. People from different countries always helped each other and so many exotic dinners held by classmates enhanced my knowledge of international courtesy and custom. In SEN, I was getting more and more open-minded, active and motivated, which are the most important in one's career.

After graduated from SEN, I was recommended to Thales China by my Thales Academia tutor. Thanks to ISAE and Thales Academia Programme, I am on my preferred career path now and hope the future students of ISAE will have a brilliant career». »