

EXECUTIVE EDUCATION ISAE-SUPAERO

2022/2023

isae
Institut Supérieur de l'Aéronautique et de l'Espace
SUPAERO
executive education



Excellence with passion



AM

ADVANCED MASTERS - 75 ECTS

1 semester Academic courses*

Professional thesis

PGDip

Post-Graduate Diplomas:
1 semester courses - 45 ECTS



Certificates of Advanced Studies:
from 44 h to 114 h - provide ECTS

Short courses:
from 9 to 52 h

* Except for Artificial Intelligence & Business Transformation Advanced Master (part-time or apprenticeship rhythm)

About ISAE-SUPAERO

Executive Education

SAE-SUPAERO has been at the forefront of aerospace innovation since 1909. We have trained more than 22,000 engineers, who are contributing to the development of the aeronautics and space sector around the world.

Our engineers' vocation is to become future leaders in the aerospace industry and the world of tomorrow.

We have developed an integrated approach with training, research and innovation in partnership with industrial stakeholders and a network of the best international universities.

ISAE-SUPAERO Professional Education stems from our 15 Advanced Master Programs. These one-year professionally-oriented advanced studies degrees are built on close ties with industry professionals. They are therefore highly valued on the job market and graduates are unique because of their specialized knowledge and experience in a given field.

Thanks to its close links with the aerospace industry, ISAE-SUPAERO has developed an innovative training offer to prepare highly employable experts, in response to the growing demands from this industry.

Professionals from around the world come to ISAE-SUPAERO to experience our on-campus courses, including Certificates of Advanced Studies and short courses.

Our professional development courses provide highly targeted learning to develop career-enhancing skills, which are dispensed by experts in the fields of Aeronautics, Space, Systems Engineering, Project Management and Digital Technologies.

On-campus courses combine theoretical and research-based knowledge with practical hands-on experience through access to exceptional technical facilities. Learners also have access to unmatched networking opportunities.

Our certificates and short courses offer an opportunity for working professionals to enroll in traditional ISAE-SUPAERO classes. They select one of the tens of ISAE-SUPAERO courses available and learn alongside our other learners.

Our courses explore wide-ranging topics and are dispensed by prominent ISAE-SUPAERO faculty staff who are renowned internationally in their respective fields.

Advanced Masters (Mastère Spécialisé®) & Postgraduate Diplomas



Some diplomas are
also accessible via
Validation of Acquired
Experience process



AERONAUTICS



/ TAS AERO, Aeronautical Engineering, Aircraft Design & Flight test Engineering

Structures and materials, Flight physics,
Avionics and systems, Aircraft design engineering.



/ HADA, Helicopter, Aircraft and Drone Architecture

Aircraft structures, Aircraft architecture, Fixed-wing
aircraft certification, Helicopters & drones.



/ AMS, Aeronautical Maintenance and Support, Engineering & Management (with Airbus Helicopters)

Aircraft general familiarization, Maintenance & health
management analysis, Airworthiness, safety and human
factors, Customer support, Supply chain and recycling.



/ ASAA, Aviation Safety: Aircraft Airworthiness (with ENAC & École de l'Air et de l'Espace)

Aeronautical techniques and study of aircraft systems,
Air Transport safety, Airworthiness.



/ AES, Aeronautical and Space Structures

Methods & tools for engineering & dynamics, Aerospace
systems architecture, Dynamics & physics, Aerospace
program & technologies.



/ SPA, Systèmes de Propulsion Aérospatiale (Taught in French)

Propulsion systems, Energetics and aerodynamics,
Aerothermal and all types of propulsion
technologies.



/ AMPAS, Advanced Manufacturing Processes for Aeronautical and Space Structures (with IMT Mines Albi-Carmaux)

Material and process basic scientific knowledge, Composite
structure forming and machining processes, Metallic structure
forming and machining processes, Industrial organization and
management.



/ IEVEX, Experimental Flight Test Engineering (taught in French, with EPNER)

Flight mechanics, Automatic control and aircraft control,
Mathematics, Aerospace technics, Propulsion tests,
Embedded-systems tests, Flight safety tests.



PROJECT MANAGEMENT

- AM** / **APM, Aerospace Project Management**
(with ENAC & École de l'Air et de l'Espace)
Aerospace sector overview, economics and finance, Knowledge management in multicultural team project.
- AM** / **MGPIE, Management de Projets Innovants et Entrepreneuriat**
(taught in French)
Project management (including agile & scrum methods), strategic planning, Lean methods, leadership, market studies, business model design, intrapreneurship, creativity and open innovation.



SPACE

- AM** / **TAS ASTRO, Space Systems Engineering & Space Exploration**
Missions & systems, Space programs sub-systems: satellites & launchers.
- AM** / **SPAPS, Space Applications and Services** (with Airbus Defence & Space)
Satellite-based earth observation applications and services, Space telecommunications and services, Navigation, Space legal and business issues.



DIGITAL

- AM** / **AIBT, Artificial Intelligence and Business Transformation** (with TBS Education & IRT Saint Exupéry)
Data integration, Machine learning, AI certification, Business data and Project Management.
- AM** / **EMS, Embedded Systems** (with INP-ENSEEIH)
Embedded Systems core, Energy, Networks, Embedded Systems design, Applications.



SYSTEMS ENGINEERING

- AM** / **SEN, Systems Engineering**
Systems modelling and analysis, Systems engineering data technical management, Systems dependability, Systems performance assessments & management, Systems design and Architecture.

Our Executive Education team

Our team is here for you, let's discover who you can contact depending on your needs.

- You want to discuss a new training need for your staff members.
- You are looking for Executive Education collaborations between your company & ISAE-SUPAERO.



Thibault Brémaud

*Head of Executive Education development
& ECATA administrator*

- You are a professional and want information on our training programs (Advanced Masters, Certificates, short courses...).
- You need help to understand which course/certificate you can take.



Jessica Alix

Executive Education Senior Advisor & Promotion Manager

info.exed@isae-supero.fr

- You already know which course you are interested in but are looking for more information.
- You need help with funding and administrative issues for your training



Sabrina Sudre

Executive Education coordinator

- You are a company or a professional and you are looking for information on the ECATA European program.
- You need help with administrative and logistics issues for your training.



Charlotte Bacquet

ECATA Program coordinator



Summary



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Human Factors



From the AM
Aeronautical
Engineering
(TAS AERO)



At ISAE-SUPAERO, I belong to a lab of experts in Human Factors and Neuroergonomics. We have been carrying out cutting edge research since 2015 using machine learning and algorithms to recognize stress and fatigue, in order to develop real-time crew monitoring methods and innovative systems for designing adapting

cockpits. Our research is closely linked to professional applications and the short courses we offer can be a good opportunity for professionals to better understand human behavior and performance. We use flight simulators and assess pilots' brain activity but the structure of these courses enables a multi-disciplinary approach to be taken that goes far beyond the aerospace sector.

Raphaëlle Roy,
Course Director

“ **ISAE-SUPAERO**
Human Factors training
programs in aviation are
of very high quality. ”



EAAP Board



Human factors and neuroergonomics for aeronautics & transportation - HF1

100 h, €6,500, Raphaëlle Roy

4 short courses: HF400, HF410, HF420, HF430

Objectives: Multi-disciplinary approach to understand human behavior and performance. Master concepts to design safer and more efficient systems that take the human operator into account.





HF1 - Human Factors

Understanding human behavior - HF400

25 h, €2,300, November 2022

Course supervisor: Raphaëlle Roy, ISAE-SUPAERO

Key contents: Nervous system; Vigilance, Fatigue & Rhythms; Perception; Attention & Executive Control; Emotions, Memory & Learning, Decision Making; Application Focuses: Pilot/Autopilot Conflict, Airline Pilot Experience.

Humans at work - HF410

25 h, €2,300, January 2023

Course supervisor: Raphaëlle Roy, ISAE-SUPAERO

Key contents: Cognitive and Physical Ergonomics; Activity Analysis; Crew Resource Management and Reasoning Biases, Social Psychology; Application Focuses: Cockpit Design, Airbus, Dassault and DSNA Human Factors perspective.

Experimentation and measures - HF420

25 h, €2,300, February 2023

Course supervisor: Sébastien Scannella, ISAE-SUPAERO

Key contents: Initiation to Experimentation; Ethics; Eye-tracking; Electrocardiography; Electroencephalography; Near Infra-Red Spectroscopy; Application Focus: Certification, Aviation/Aerospace psychology & medicine.

Advanced techniques - HF430

25 h, €2,300, March 2022

Course supervisor: Raphaëlle Roy, ISAE-SUPAERO

Key contents: Signal processing for physiological data; Statistical Analysis of Experimental Data; Passive Brain Computer Interfaces as tools for Neuroergonomics; Simulator studies; Application Focuses: Experimental work using real light airplanes; Accidentology.

Helicopter, Aircraft and Drone Architecture



From the AM
Helicopter,
Aircraft and
Drone
Architecture
(HADA)



The Helicopter, Aircraft and Drone Architecture (HADA) Advanced Master Program has been jointly designed and developed by ISAE-SUPAERO and Airbus Helicopters. It provides a high-level of engineering and technical skills for careers in the aircraft, helicopter and drone industries. Our courses and certificates provide skills required for aeronautical engineers (architecture, certification and structures) and specific skills to identify and implement

solutions for aircraft, helicopter and drone projects. This program prepares participants for a wide range of professional opportunities from design, certification and operation of civil and military aircraft, drones and helicopters in France and abroad.

Jean-Marc Moschetta,
Program Head



UAV Systems - HAD1

80 h, €5,000, Jean-Marc Moschetta
4 short courses: HAD500, HAD501, HAD502, HAD503

Objectives: Understanding Unmanned Aerial Systems from design to operations.



Helicopter Engineering 1 - HE1

95 h, €6,500, Jean-Marc Moschetta
3 short courses: THE1, THE2, THE3

Objectives: Understanding helicopter flight dynamics, vibration and construction technics.

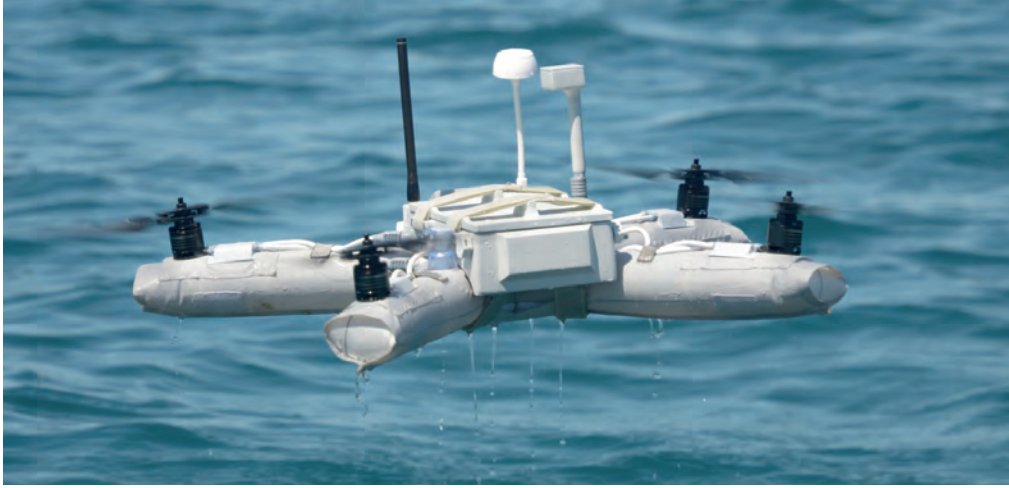


Helicopter Engineering 2 - HE2

60 h, €4,000, Jean-Marc Moschetta
2 short courses: THE4, THE5

Objectives: Mastering helicopter embedded systems, flight tests and production quality.





Drones systems: design and mission - HAD500

24 h, €2,000, January 2023

Course supervisor: Christophe Duverger, THALES

Key contents: *Introduction to Unmanned Aerial Systems. Concepts and use cases: military and civil operations, regulations; air vehicle classification and main vehicles description; systems architecture and certification; payloads description and interest; trends: market, roadmaps, programs, studies and future needs.*

Payload and sensors for UAVs - HAD501

24 h, €2,000, January 2023

Course supervisor: Nicolas Rivière, ONERA

Key contents: *Review of sensors and payloads for UAVs: EO/IR sensors, radars, laser range finders, LiDAR. Image processing. Introduction to navigation through vision, SLAM.*

Drone safety and airworthiness - HAD502

13 h, €1,800, January 2023

Course supervisor: Catherine Ronflé-Nadaud, DGAC

Key contents: *UAS (Unmanned Aircraft System) operations are risk-based while access to the airspace is performance-based. This module presents how UAS airworthiness is managed depending on the operation and how the air risk could be mitigated with UAS traffic management.*

Drone guidance and navigation - HAD503

19 h, €2,000, January 2023

Course supervisor: Yves Brière, ISAE-SUPAERO

Key contents: *Architecture of embedded systems as applied to drones: autopilots, sensors, Inertial Measurement Unit (IMU), modems. Basic concepts of guidance and navigation for drones. Practical lab work sessions on quadrotors.*

VTOL Drones - HAD506

30 h, €2,300, April 2023

Course supervisor: Damien Chevrey, AIRBUS HELICOPTERS - Marignane

Key contents: *Introduction to VTOL Drones, autonomy levels, navigation in hostile environment, communication performance, ship-deck landing. Military and civil architectures, artificial-intelligence-based autonomous architecture.*



HE1 - Helicopter Engineering 1

Understanding helicopters - THE1

30 h, €2,300, February 2023

Course supervisor: Didier Casolaro, AIRBUS HELICOPTERS - Marignane

Key contents: Rotor aerodynamics, helicopter flight qualities, helicopter performance, noise analysis and pre-design methods.

Helicopter dynamics - THE2

32 h, €2,300, March 2023

Course supervisor: Rémi Coisson, AIRBUS HELICOPTERS - Marignane

Key contents: Rotor dynamics, helicopter internal noise, structural dynamics and aero elasticity, fatigue and safety.

Helicopter materials and technology - THE3

33 h, €2,300, March 2023

Course supervisor: Marc-Antoine Celli, AIRBUS HELICOPTERS - Marignane

Key contents: Helicopter production materials and technologies, composite materials, blade technology, rotor hub technology, gear box mechanisms, fatigue phenomenon, finite element methods as applied to helicopters.

HE2 - Helicopter Engineering 2

Helicopter avionics systems - THE4

33 h, €2,300, March 2023

Course supervisor: Erwan Guillaumont, AIRBUS HELICOPTERS - Marignan

Key contents: Radio communication, navigation and guidance. Helicopter Fly By Wire. Cockpit ergonomics, system integration, reliability and safety analysis. Human-machine interface.

Helicopter: Prototypes, tests, production, quality - THE5

27 h, €2,300, March 2023

Course supervisor: Nicolas Vidal, AIRBUS HELICOPTERS - Marignane

Key contents: Helicopter flight test and integration. Value analysis and production methods. Aeronautical regulation and quality. Computer aided production management, helicopter maintenance.

Maintenance & Support



From the AM
Aeronautical
Maintenance
and Support
Engineering and
Management
(AMS E&M)



The Aeronautical Maintenance and Support Engineering and Management - AMS E&M - Advanced Master Program delivers the appropriate high-level competencies and know-how in aircraft architecture, maintenance and support dispensed by experts. The course provides exposure to the latest techniques and methods, regulations and standards that apply throughout this value chain. The certificates and short courses we offer will help participants increase their skills to perform in the fast-changing global Maintenance & Support industry.

Joël Jezegou,
Program Head



Airworthiness & human factors for maintenance - AMS1

42 h, €4,000, Joël Jézégou
2 short courses: AMS500, AMS600

Objectives: Understand continuing and continued airworthiness regulations, complemented by ETOPS operational approval and aircraft transfer. Understand safety aspects through human factors concepts and tools for a practical implementation of Safety Management System in an MRO environment.



AMS1 - Airworthiness & human factors for maintenance

Continuing and continued airworthiness - AMS500

23 h, €2,000, January 2023
Course supervisor: Joël Jézégou, ISAE-SUPAERO

Key contents: EASA Part-21 Continued airworthiness process and in-service occurrence reporting EASA Continuing airworthiness regulations (Part-M, Part-145, Part-147, Part-66); ETOPS operations (approval, maintenance requirements and practices); aircraft transfer.

Human factors and Safety Management System in Aeronautical Maintenance - AMS600

19 h, €2,000, March 2023
Course supervisor: Christine Garces-Zylawski, AIR FRANCE

Key contents: Human factors (individual and collective human performance and limitations, role of management); Safety Management System (SMS) concept, organization and responsibilities; risk management techniques in aeronautical maintenance environment (strategies, models: bowtie/ Reason/PEAR, techniques: MEDA/MLOSA); safety culture promotion.



Aircraft structure and materials for aircraft maintenance engineer - AMS103a

48 h, €2,900, October 2022

Course supervisor: Jean-Fred Begue, DGA

Key contents: *Flight and ground loads; fatigue and ageing aircraft (fatigue phenomena, endurance-initiation propagation, fracture mechanics, widespread fatigue damage, fatigue and damage tolerance for composite structures) airframe and engines materials (performance criteria, properties, applications); non-destructive tests (processes, techniques); introduction to additive layer manufacturing.*

Structural repairs - AMS103b

12 h, €1,600, November 2022

Course supervisor: Jean-Fred Begue, DGA

Key contents: *Structural repairs (damage, repair scenarios and criteria, methodologies, justification, approval, SRM).*

Aviation regulation and airworthiness - AMS107a

12 h, €1,600, December 2022

Course supervisor: Joël Jézégou, ISAE-SUPAERO

Key contents: *Aviation safety objectives; international conventions and ICAO; European regulations and EASA; airworthiness regulation (initial type certification, certification of changes, continued airworthiness); overview of operations regulation.*

Aircraft safety analysis - AMS107b

19 h, €2,000, December 2022

Course supervisor: Joël Jézégou, ISAE-SUPAERO

Key contents: *Safety of complex system principles; safety and reliability studies (FHA, PSSA, SSA); common cause analysis (PRA, ZSA, CMA).*

Predictive maintenance and data analytics - AMS301

23 h, €2,000, March 2023

Course supervisor: Fabrice Lebeau, DASSAULT AVIATION

Key contents: *Prognostics and health management (PHM) and predictive maintenance concepts; applications in aeronautics from aircraft data generation to development of added-value services; introduction to data science and machine learning techniques; usage of data analytics for maintenance purposes.*

Aviation Safety & Aircraft Airworthiness



From the AM
Aviation Safety
& Aircraft
Airworthiness
(ASAA)

The Aviation Safety: Aircraft Airworthiness – ASAA – Advanced Master Program aims at giving future managers a broad understanding of the issues and priorities in Airworthiness. We focus on providing skills that are essential to air transport safety and range from design to operations, within the international legal environment. Our certificates and short courses stemming from this Advanced Master course cover both aspects of certification and legal and economic implications.

Joël Jezegou,
Head of Program



Aircraft Engineering for Certification of Avionics & Systems - AEC1

78 h, €5,000, Joël Jézégou
2 short courses: AW9, AW10

Objectives: *Acquire a comprehensive understanding of aircraft avionics, general systems and cabin, with due consideration given to technical skills for an airworthiness engineer and relevant certification requirements.*



Aircraft Engineering for Certification of Flight and Structure - AEC2

91 h, €6,500, Joël Jézégou
2 short courses: AW7, AW8

Objectives: *Acquire a comprehensive understanding of aircraft flight dynamics, structure and materials, with due consideration given on technical skills for an airworthiness engineer and on relevant certification requirements.*





Environmental certification - AW4

21 h, €2,000, February 2023

Course supervisor: Fabrice Tristant, DASSAULT AVIATION

Key contents: Aircraft engine emissions; aircraft noise; lightning phenomena and protection; icing and ice protection; electro-magnetic hazards (EMH).

Normal-category aircraft and unconventional products certification - AW6

23 h, €2,000, March 2023

Course supervisor: Joël Jézégou, ISAE-SUPAERO

Key contents: Understanding Regulation proportionality and CS-23; Technological innovation and certification; electrical and hybrid vehicles; UAVs; New air mobility challenges.

Avionics - AW9

27 h, €2,300, January 2023

Course supervisor: Lionel Bertin, AIRBUS

Key contents: Airplane avionics functions and systems: communication, navigation and surveillance, autoflight system, flight management system, electronic centralized aircraft monitoring; Integrated Modular Avionics (IMA) architecture and certification; connected aircraft and related certification challenges.

General Systems and cabin - AW10

50 h, €2,900, January 2023

Course supervisor: Joël Jézégou, ISAE-SUPAERO

Key contents: Airplane general systems and cabin architecture, certification requirements: covering electrical systems, hydraulic systems, flight controls, landing gear, pneumatic systems and ice protection systems, fuel systems, oxygen systems, fire protection, cabin and cargo arrangement and safety.

AEC2 Aircraft Engineering for Certification of Flight and Structures

Flight - AW7

43 h, €2,900, November 2022

Course supervisor: Jacques Verrière, pilot & flight safety expert

Key contents: Jet airplane principles of straight and steady level flight; high speed cruise performance; climb and acceleration performance; maneuvering performance; take-off and landing performance; handling qualities; stability and control; dynamic stability; certification requirements.

Structure - AW8

48 h, €2,900, December 2022

Course supervisor: Laurent Michel, ISAE-SUPAERO

Key contents: Airplane airframe architecture; Materials performance criteria and properties; Flight and ground loads; Fatigue of aircraft structure; Ageing aircraft; Certification of composite structures; Applicable certification requirements and compliance demonstration.

Engine and powerplant - AW11

27 h, €2,300, January 2023

Course supervisor: Xavier Carbonneau, ISAE-SUPAERO

Key contents: Engine thermodynamics; engine control, engine certification; turboshaft and turbopropeller; Auxiliary Power Units (APU); powerplant integration and certification.



Aerospace Structures



From the AM
Aeronautical
& Space
Structures
(AES)



The Aeronautical & Space Structures Advanced Master Program prepares engineers for a future career in design, R&D, or certification, in connection with mechanical engineering applied to structures.

Our Master program is a European reference in the field and we have identified 4 short courses that can be taken by professionals. You can thus increase your skills in numerical calculation for the most advanced structures, your knowledge

of materials, as well as your understanding of how they interact with the environment, in particular loads and fluid-structure interactions.

Yves Gourinat,
Program Head

Structural shells analysis & modeling - SA410

17 h, €1,800, January 2023

Course supervisor: Yves Gourinat, ISAE-SUPAERO

Key contents: Calculation of symmetric membranes; Equations of discrete dynamics; Dynamics of solid continuous media; hybrid systems; Reissner's general shell theory.

Advanced numerical methods - SA411

11 h, €1,600, January 2023

Course supervisor: Christine Espinosa, ISAE-SUPAERO

Key contents: Explicit FEM models: Explicit algorithms, Matrix variability, Material modelling, Rapid dynamics. Particle techniques: SPH method, Fragmentation & fluid interaction.

Flexible structure dynamics: modeling & control - SA402

20 h, €2,000, November 2022

Course supervisor: Daniel Alazard, ISAE-SUPAERO

Key contents: Modelling of flexible structures: Lagrange equations, notions of effective masses, Substructuring, modal analysis of flexible structures, colocation of actuators/sensors, model reduction. Theory of linear servoing: transfer function/state representation, modal analysis, root location, frequency analysis, stability margins, gain/phase control of flexible modes.

Introduction to strategic management: an application to the aviation industry - SA409

15 h, €1,800, February 2023

Course supervisor: Paul Chiambaretto, MONTPELLIER BUSINESS SCHOOL

Key contents: Specificities of civil aircraft construction; Situation of the Airbus-BOEING cluster; Civil aviation activity since 1952 (traffic, transport and fleet); Difficult technical compromises in product definition; Industrial, commercial and financial management of an activity in global competition.

Artificial Intelligence



ISAE-SUPAERO has been committed to the AI industrial and universities ecosystem from 2011. ANITI brings together players and universities who share the goal of making Toulouse the AI world leader.

ISAE-SUPAERO enhances executives' skills - and especially targets those who graduated before the "AI wave" - working in all economic sectors.

Our Artificial Intelligence & Business Transformation

Advanced Master Program is a part-time training program (also accessible in apprenticeship format if you are under 30) for technical managers or high-potential managers. Certificates of Advanced Studies will enable you to focus on strategic topics in your career path.



From the AM
AI & Business
Transformation
(AIBT)



Artificial
Intelligence
Toulouse
Institute

Nicolas Drougard,
Program Head

CAS

Certificate
of Advanced
Studies

Data integration and processing for value creation - AIBT1

84 h, €5,000, Nicolas Drougard

3 short courses: AIBT101, AIBT102, AIBT103

Objectives: Understand key components of ETL-based data warehousing. Devise indicators on data quality and management. Implement the distribution of simple operations via the Map/Reduce principle in Spark. Connect on a cloud computing engine. Understand the usefulness of containers. Deploy a Docker container.

CAS

Certificate
of Advanced
Studies

AI oriented business model design - AIBT2

84 h, €5,000, Nicolas Drougard

3 short courses: AIBT101, AIBT104, AIBT107

Objectives: Discover how modern AI has an impact on businesses. Know about the main legal aspects of data and learn about "platforms" business models. Understand the impact of Big Data and Deep Learning on innovation.

CAS

Certificate
of Advanced
Studies

Development & deployment of efficient AI technologies - AIBT3

84 h, €5,000, Nicolas Drougard

3 short courses: AIBT106, AIBT 108, AIBT 110

Objectives: Explore the data analytics workflow. Discover a general overview of Machine Learning, Supervised and Unsupervised Learning. Know the main bottlenecks and challenges of data-driven approaches. Discover Reinforcement Learning and main concepts of modern Deep learning algorithms.

Professional certification «Chef de projets en Intelligence Artificielle et Science des Données (MS)» - RNCP 35609



AIBT1

Data integration and processing for value creation

Data integration and exploration - AIBT102

28 h, €2,300, November 2022

Course supervisor: Bilel Sdiri, TRIMANE

Key contents: Data Warehousing; History and recent evolutions; Architecture; Key functions; Layers. Data quality; Indicators; improvement. Data visualization; visual perception; tools.

Big data processing - AIBT103

28 h, €2,300, December 2022

Course supervisor: Guillaume Eynard-Bontemps, CNES

Key contents: Distributed computing with Spark; MapReduce paradigm; Hadoop Stack; Hadoop Distributed File System. Virtualization and cloud computing; Economical models; Technical benefits; cloud engines. Docker.

Introduction to modern AI - AIBT101

30 h, €2,300, October 2022

Course supervisor: Michaël Hoarau, AMAZON WEB SERVICES

Key contents: AI Basics; Machine Learning; Unsupervised and Reinforcement Learning. Fueling AI; Understanding the relationship between problem framing. Business outcomes and applicable algorithms. Business intelligence and business models. Major Business and AI success stories

The business of data - AIBT104

28 h, €2,300, January 2023

Course supervisor: Olivier Flebus, VITESCO et Grégory Voss, TBS EDUCATION

Key contents: AI in the world, geostrategic point of view through data and cloud. Legal environment (GDPR and beyond). New economy and the sharing economy. Open data.

Data value creation - AIBT107

28 h, €2,300, March 2023

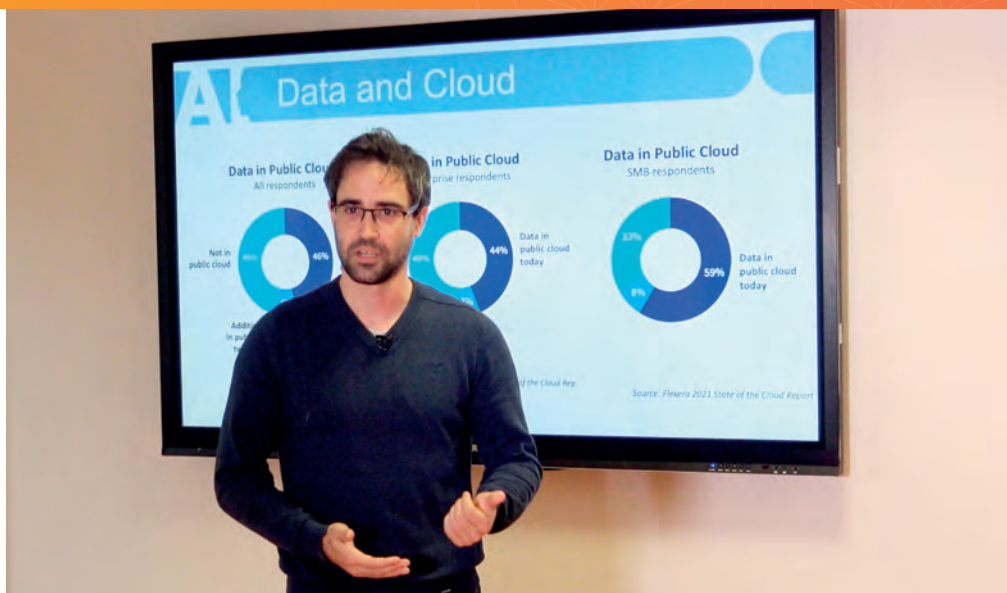
Course supervisor: Serge Nyama, TBS EDUCATION

Key contents: AI and the marginal value of data, of algorithms. Changing the cost of prediction. Machine learning, market structure and competition; impact of productivity growth on employment. The impact of artificial intelligence on innovation.

AIBT2

AI oriented business model design





Machine learning and data analytics - AIBT106

28 h, €2,300, February 2023

Course supervisor: Jonathan Sprauel, THALES ALENIA SPACE

Key contents: The data analytics workflow; General overview of Machine Learning; Unsupervised Learning. Ensemble methods; Anomaly detection; Bio-inspired ML, Neural Networks and Deep Learning. Feature engineering and data preprocessing.

Sequential decision making in AI - AIBT108

28 h, €2,300, April 2023

Course supervisor: Florent Teichteil-Koenigsbuch, AIRBUS et Emmanuel Rachelson, ISAE-SUPAERO

Key contents: Reinforcement Learning (RL); modern Deep RL algorithms. Scheduling; optimization methods, modeling frameworks. Path Planning, path algorithms, heuristic search, motion planning. Decentralized decision making; Multi-agent concepts and game theory. Collaborative and adversarial decision making.

AI certification, robustness and dependability - AIBT110

28 h, €2,300, June 2023

Course supervisor: Grégory Flandin, IRT SAINT-EXUPERY

Key contents: Learning algorithms and robustness, interpretability and explainability, certificability. Norms in the aerospace and automotive industries; human/machine couple in the decision process. Certification of systems based on AI; main legal initiatives on the subject; major technology trends underlying norms on AI. Links between usual engineering validation processes and their use on AI.

Optimization topics for AI - AIBT105

28 h, €2,300, January 2023

Course supervisor: Xavier Olive, ONERA

Key contents: Artificial Intelligence, Machine Learning and Optimization. Gradient Descent Optimization. Gradient based optimization methods; Convergence in Deep Learning. Discrete optimization; Discrete satisfaction and optimization methods. Metaheuristics; genetic algorithms; stochastic methods, CMA-ES, cross-entropy.

Change management - AIBT109

28 h, €2,300, May 2023

Julius Akinyemi, TBS EDUCATION

Key contents: Change management; Innovation organization and management. Entrepreneurial ecosystem in AI in Montréal; Relocation of AI innovation from big business to startups; Meetings with testimonials from entrepreneurs and major companies.

Project Management & Innovation



Top managers need to master technical and managerial skills. Project management requires mastering

a wide scope of knowledge and know-how adapted to this challenging worldwide business. To address these needs, ISAE-SUPAERO offers 2 Advanced Master programs:

- The Aerospace Project Management – APM - Advanced Master Program provides participants with cutting-edge knowledge and the skills required to lead Project or Program teams in the global aerospace and defense industry.
- The Management de Projets Innovants & Entrepreneuriat – MGPIE, Advanced Master Program fully taught in French – focusing on developing innovation skills, as well as entrepreneurial methods and tools.

Those skills are increasingly critical to our industry and we offer 1 certificate and 9 short courses to professionals who are seeking to boost their skills.

Philippe Girard,
Program Head



Project Management - AIBT 100

60 h, €4,000, part-time (3x1 week), Nicolas Drougard

Key contents : Project Management principles (OBS, WBS, planning, risk & control, Agile & V cycle), Data governance, digital transformation, Systems engineering (principles, methods and architecture and MBSE), New ways of working, Agile@scale implementation, Value Proposition & business model, Project presentation & Pitch, PMBok® presentation, Cybersecurity & risk management, Change management.



From the AM
AI & Business
Transformation
(AIBT)



Preparation to PMI certification - PMI1

60 h, €4,000, (exam registration cost not included), part-time 2 days/week, Philippe Girard.

Objectives: Get trained by PMBOK experts to prepare the CAPM® (Certified Associate in Project Management) or PMP® (Project Management Professional) exams.

PMI certification is well-known, acknowledged and appreciated all over the world. The teachers are certified themselves and reference PMBOK experts.



From the AM
Aerospace
Project
Management
(APM)



Idéation et innovation technologique - MP1

57 h, €4,000, Philippe Girard
4 short courses: MP151, MP152, MP255, MP311

Objectives: Discover Design thinking approach, make a prototype and acquire a basic understanding of neurosciences and cognition to enhance your creativity skills. Understand recent collective intelligence and open innovation tools to manage and boost teams and facilitate teamwork. Acquire communication process and management style knowledge.



From the AM
Management
de Projets
Innovants &
Entrepreneuriat
(MGPIE)



MP1 Idéation et innovation technologique

Design Thinking - MP151

9 h, €1,600, October 2022

Course supervisor: Pascale Ripoll, AGIL'INNOV

Key contents:

Discover Design thinking methodology, User observation and interviews, Customer Journey Map and quick prototyping.

Créativité - MP152

21 h, €2,000, October 2022

Course supervisor: Valérie Sanchis, Frugal Innovation Consultant

Key contents:

Neuroscience and cognition fundamentals to understand creativity mechanism; Creativity boosters (CPS, ASIT methods) and creativity session leadership for innovation projects.

Intelligence collective - MP255

18 h, €1,800, October 2022

Course supervisor: Anne-Hélène Labissy, ALTER HUMAN

Key contents:

Collective and participatory dynamics, collaborative leadership, Collective Intelligence tools (including numerical tools) and team coaching and facilitation fundamentals.

Open Innovation - MP311

9 h, October 2022

Course supervisor: Cyril Durand, OCÉAN BLEU

Key contents:

Open Innovation approach and management, partnerships modes, Intellectual Property topics, open source patents and software mindsets.

 Taught in French

MP311 course can only be attended as part of the MP1 certificate



Conduite et gestion de projet - MP201

30 h, €2,300, November 2022

Course supervisor: Frédéric Minart, INDIANA CONSEIL & FORMATION

Key contents:

Project management overview (organization and steering notions), project simulation, risk and events management. Project environment: human factors, after-project steps, customer/ subcontractor relationship management.

Négociation - MP 253

21 h, €2,000, January 2023

Course supervisor: Vincent Frey, KEDGE BS

Key contents:

Negotiation strategies, identifying rational and irrational needs, designing win-win proposals, stand definition and defense, trust building; uncertainty management, conflict management, creativity and strategy plans.

Lean Startup - MP303

12 h, €1,600, January 2023

Course supervisor: Youenn Cosotti, BACK MARKET et Nicolas Prévitali, UBER FRANCE

Key contents:

Reducing time to market, customer-centric and MVP (Minimum Viable Product) approaches. Business models, Osterwalde matrix, product or service prototyping, Mock up and wireframes tools, early adopters community management, Defining, analyzing and reporting key performance indicators.

Méthodes Agile et scrum - MP312

21 h, €1,800, November 2022

Course supervisor: Géry Schneider, IBM

Key contents:

Customer-centric project management approach, team productivity boosters (versatility, multitasking), Agile approach introduction: values, principles and most commonly used methods (Kanban, Scrum...).



Taught in French

Space Systems Engineering



From the AM
Space Systems
Engineering
(TAS ASTRO)



The TAS Astro - Space Systems Engineering - Advanced Master Program allows trainees to develop a high level of multidisciplinary skills in space science, space systems engineering and space project management. Almost 1 in 5 students graduating at ISAE-SUPAERO go on to work in the space sector and we have a unique position in the ecosystem with space agencies, research agencies and industrial companies in an international environment.

Stéphanie Lizy-Destrez,
Program Head



Launchers - IS1

113 h, €6,500, Stéphanie Lizy-Destrez
4 short courses: IS413, IS415, IS431, IS453

Objectives: Understand the main design processes for launchers. Master the concepts of basic astrodynamics related to the guidance of LEO, GEO and interplanetary space trajectories. Acquire knowledge of the physics of the space environment encountered by the vehicle. Discover Control and Guidance algorithms and the principles of inertial navigation techniques.



IS1 - Launchers

Space environment and effects - IS413

12 h, €1600, October 2022

Course supervisor: Angelica Sicart-Piet, ONERA

Key contents: Knowledge of the physics of the space environment encountered by the vehicle; constraints imposed by the environment; training techniques for predicting effects on materials, electronic components and embedded systems. Various solutions to mitigate degradations and impacts on the system involved.

Mission analysis and orbital mechanics - IS415

27 h, September 2022

Course supervisor: Stéphanie Lizy-Destrez, ISAE-SUPAERO

Key contents: Concepts of basic astrodynamics related to the development and control of the LEO, GEO or interplanetary space trajectories.

Launchers architecture - IS431

49 h, November 2022

Course supervisor: Luc Gonidou, CNES

Key contents: Main design processes for launchers. Different types of launchers, functions breakdown, links between functions and subsystems. Applications on staging and performances.

Launchers guidance and control - IS453

26 h, February 2023

Course supervisor: Stéphanie Lizy-Destrez, ISAE-SUPAERO

Key contents: Control and Guidance algorithms: principles, operational uses, exchange parameters. Principles and components of the inertial navigation techniques. Specification and design of the inertial measurement units (IMU). System trend for future launchers.

IS415, IS431, IS453 courses can only be attended as part of the IS1 certificate



Space communications systems - IS418

21 h, €2,000, January 2023

Course supervisor: José Radzik, ISAE-SUPAERO

Key contents:

Introduction to Satellite Communications Systems; Satellite communications systems architectures and components; Types of orbits, radio regulations. Link Analysis; Digital communications; Satellite networking; Multibeam satellite systems. Satellite communications payload; Performance objectives and functions; Repeater architecture; Antenna coverage concepts.

Space surveillance - IS440

20 h, €2,000, February 2023

Course supervisor: Carlos Yanez, CNES

Key contents:

General overview on space debris (origin, sources, risks, evolution) including concepts about Space Surveillance and Tracking (SST). Different techniques used: Orbit Determination, Observation-to-Object association problem, Collision Risk Management, Time of Closest Approach(TCA), computation of the Probability of Collision(PoC) with a short-encounter method.

Space systems architecture - IS450a

20 h, €2,000, January 2023

Course supervisor: Jérémie Chaix, AIRBUS DEFENCE & SPACE

Key contents:

Mission analysis; Orbitography; Tracking error analysis. Radio communications; Satellite emitter power; Station emitter power; Link budget calculation. Thermal analysis; External flux analysis; Temperatures calculation. Power subsystem; Solar panel sizing; Battery sizing; Global analysis. Attitude control system; External torques analysis; Performance requirements; Architecture definition; Actuators and sensors sizing.

Systems engineering of space systems - IS552

18 h, €2,000, January 2023

Course supervisor: Frédéric Faye, AIRBUS DEFENCE & SPACE

Key contents:

Juice spacecraft system design approach; Mission concept and astrometry measurement principle; Spacecraft design elaboration; Spacecraft design evolutions from advanced studies to frozen design; Spacecraft autonomy and failure management; Development model philosophy; Test facilities and environmental test campaigns; Functional verification; Performance verification; Juice project management. Implementation of Juice within the ESA space science program; Industrial organization and team build up.

Space Applications & Services



From the AM
Space
Applications
& Services
(SPAPS)



We offer a Space Applications & Services - SPAPS - Advanced Master Program, which gives participants a broad understanding of space systems and their environment, constraints and capacities in the fields of earth observation, communications and navigation.

Raphaël Garcia,
Program Head

CAS

Certificate
of Advanced
Studies

Earth Observation - APS1

73 h, €5,000, Raphaël Garcia
3 short courses: APS302, APS303, APS304

Objectives: Master the basics of image processing. Identify relevant analytics for end users. Develop the processing chain needed to obtain the corresponding data. Have a broad view of the services that can be provided based on spatial imagery. Be able to identify the performances of space data analysis related to intelligence application requirements.

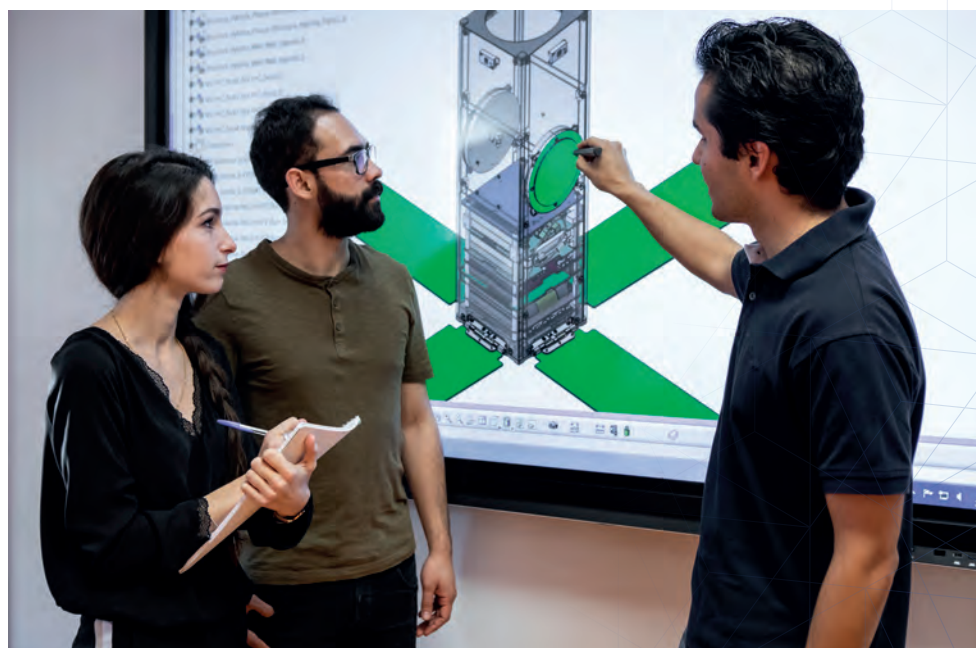
CAS

Certificate
of Advanced
Studies

Satellite Telecommunication Network - APS2

50 h, €4,000, Raphaël Garcia
2 short courses: APS401, APS402

Objectives: Understand the principles of IP network architectures. Be able to characterize the end-to-end quality of service and identify the distribution of objectives by segments. Be able to identify protocols and equipment needed for secured network architecture. Be able to describe network topology and define roles. Understand the impact of the satellite link on end-to-end quality of service. Understand satellite link major dimensioning parameters and adaptation to the radiofrequency channel. Be able to determine user experience quality.





APS1 - Earth Observation

Image processing and data analysis - APS302

29 h, November 2022

Course supervisor: Laurent Guillaume, AIRBUS DEFENSE & SPACE

Key contents: Introduction to human and computer vision as a baseline for object identification; principles of image processing; workshops and Python implementation; computer vision lab.

Applications and services, agriculture and forest - APS303

26 h, November 2022

Course supervisor: Anne Jacquin, AIRBUS DEFENSE & SPACE

Key contents: Vegetation maps from optical data; Agriculture analytics and Pixel Factory use; workshops using I4D and Overland tools; in the field application.

Applications and services, natural resources and intelligence - APS304

18 h, December 2022

Course supervisor: Michaël Tonon, AIRBUS DEFENSE & SPACE

Key contents: Intelligence and military applications; land surveillance; maritime domain surveillance; oil, gas and mining; water cycle.

APS2 - Satellite Telecommunication Network

Telecommunications and networks - APS401

18 h, October 2022

Course supervisor: José Radzik, ISAE-SUPAERO

Key contents: Layered networks, protocols and services. Introduction to telecommunication networks, IP network architecture; IP routing, IPv4/IPv6 address management; Quality of Service (QoS) principles; Lab interactions between access techniques in satellite networks and upper protocol layers; encryption principles; introduction to radio network access techniques.

Broadband satellite communication systems - APS402

32 h, January 2023

Course supervisor: José Radzik, ISAE-SUPAERO

Key contents: Architecture of satellite communication systems, topologies and introduction to the link budget; propagation at high frequencies and Adaptive Coding and Modulation; link budget and radio resource management, multibeam coverage and frequency reuse; earth station and infrastructure; satellite Internet access network and Broadband Satellite Multimedia standards, DVB-S2 principles; Lab: continuous carrier operation for the return link; DVB-RCS2, MF-TDMA, DAMA radio resource management, random access and integration in IP networks; Lab: DVB-RCS2 return link, deterministic access; higher layer design, performance enhancement.

APS302, APS303, APS304 courses can only be attended as part of the APS1 certificate
APS401, APS402 courses can only be attended as part of the APS2 certificate

Systems Engineering



From the AM
Systems
Engineering
(SEN)



The Systems Engineering – SEN – Advanced Master aims at equipping professionals so they can specify, design, deploy and maintain complex systems in various industrial sectors: space, aeronautics, air traffic control, land transport systems, maritime transport, energy, communication systems...

Systems Engineering is an interdisciplinary engineering discipline. Its approach is based upon technical processes (requirement engineering, design, integration, verification, validation, etc.) as well as project management processes, agreement processes and enterprise processes implementation.

Jean-Charles Chaudemar,
Program Head

Professional certification

«Architecte - Manager en ingénierie système (MS)» - RNCP 36470



CAS

Certificate
of Advanced
Studies

Value-driven Systems Engineering - SEN1

98 h, operated by EUROSAE

Objectives: Acquire the basics of System thinking, System engineering management, Requirement engineering, MBSE (Model Based Systems Engineering), System architecture, System design.

CAS

Certificate
of Advanced
Studies

Preparation for INCOSE ASEP & CSEP certification - SEN2

70 h, €5,000, Rob Vingerhoeds

Objectives: Become INCOSE ASEP or CSEP certified. Understand the definition and concepts of a system; learn the concepts of System thinking and Life cycle overview; analyze technical processes ranging from requirements, to implementation, integration, verification and validation; understand how systems engineering contributes to business aspects.



Professional and custom-made courses with EUROSAE



All ISAE-SUPAERO certificates and short courses introduced in the pages above are components of our Advanced Masters Programs. ISAE-SUPAERO also has a subsidiary, EUROSAE, fully dedicated to training professionals. EUROSAE has been offering professional education since 1960. It is based in Paris and Toulouse (inside ISAE-SUPAERO's facilities). EUROSAE combines the advantages of agility and in-depth expertise thanks to the access it has to the expert ecosystems. Lecturers come from either the academic world or from industry. They form a network of 1,600 experts and can help you define your need and find a custom-

designed training solution.

ISAE-SUPAERO and EUROSAE work together on a day-to-day basis to build new teaching solutions and make the most of their assets and strengths, such as their facilities and human resources.

We can work with industrial partners to create new programs such as the following executive certificate in Value Driven Systems Engineering, which resulted from a need expressed by CAP GEMINI and is a spin-off from our SEN Advanced Master Program operated by EUROSAE.

















Short Aerospace courses

Short courses taught in French

in Paris 

in Toulouse 

Aeronautic, Space & Defence

	AED 002	Systèmes propulsifs à propergols solides
	AED 003	Les facteurs humains dans l'aéronautique : concepts et mise en pratique sur simulateur et avion TB 20
	AED 004	Qualités de vol des avions modernes - Commandes de vol électriques
	AED 005	La conversion des aéronaves : L'approche industrielle du processus STC (#)
	AED 006	Mécanique spatiale et contrôle des véhicules spatiaux
	AED 007	Conception des lanceurs et véhicules de rentrée
	AED 008	Initiation à la mécanique du vol : des bases théoriques à l'application
	AED 008D	Introduction to flight mechanics
	AED 009	Systèmes propulsifs à propergols liquides
	AED 010	Conduite du vol
	AED 011	Conception de l'avion : techniques pour un avant-projet d'avion de transport commercial
	AED 012	Conception des satellites
	AED 013	Architecture des satellites
	AED 014	Segment sol de contrôle et opération des satellites
	AED 015	Architecture électrique avion : système électrique de la famille Airbus
	AED 017	Télémessures, télécommandes, localisation des satellites

Aeronautic, Space & Defence

	AED 019	Techniques des hélicoptères
	AED 020.1	Les techniques d'essais dans l'aéronautique
	AED 021.1	Initiation aux techniques d'essais en vol
	AED 022	Introduction aux systèmes spatiaux
	AED 023	Givrage en aéronautique
	AED 024	Le projet aéronautique : de la genèse à la réalisation
	AED 025	Le foudroiement des aéronefs
	AED 026	Systèmes d'air aéronautiques
	AED 027	Prise en compte du facteur "sécurité" dans la conception des avions
	AED 028	La sécurité feu dans les aéronefs
	AED 029	Initiation à la conception des avions
	AED 030	Les mini-drones : enjeux applicatifs et innovations technologiques
	AED 032	Introduction aux missiles tactiques
	AED 033	Conception des missiles tactiques
	AED 034	Introduction aux nano satellites
	AED 035	Guidage infrarouge des missiles tactiques
	AED 036	Autodirecteurs électromagnétiques des missiles tactiques
	AED 037.1	Maintenance des systèmes aéronautiques : aspects techniques et stratégiques
	AED 038	Introduction à la maintenance programmée d'un avion de transport civil : processus MRB et Méthode MSG-3
	AED 039	Moteurs d'hélicoptères : technologies et intégration à l'hélicoptère
	AED 040	Les standards aéronautiques pour la certification des systèmes avioniques et ATM
	AED 041	Géopositionnements statiques et dynamiques précis
	AED 042	Les différences entre normes de maintien de navigabilité
	AED 043	La navigation de l'avion - Situation actuelle et évolutions
	AED 045	Les débris spatiaux et la surveillance de l'espace
	AED 046	Qualités de vol des avions de transport modernes
	AED 050.1	Certification des équipements aéronautiques : les processus réglementaires pour l'aviation commerciale
	AED 050.2	Certification des équipements aéronautiques : les processus réglementaires pour l'aviation commerciale
	AED 051.1	La navigabilité des aéronefs civils : de la conception à la maintenance
	AED 051.2	La navigabilité des aéronefs civils : de la conception à la maintenance
	AED 052	La navigabilité des aéronefs étatiques: de la conception à la maintenance
	AED 053.1	La navigabilité des aéronefs civils et étatiques : de la conception à la maintenance
	AED 053.2	La navigabilité des aéronefs civils et étatiques : de la conception à la maintenance
	AED 054	PART 21J : Organismes de conception-Extension à la réglementation étatique (FRA 21J)
	AED 055	PART 21G : Organismes de production - Extension à la réglementation étatique (FRA 21G)
	AED 056	PART M : Maintien de la navigabilité - Extension à la réglementation étatique (FRA M)
	AED 057	PART 145 : Organismes de maintenance : Extension à la réglementation étatique (FRA145)
	AED 058	Assurance sécurité des logiciels dans le contrôle aérien ED-109, ED-109A et ED-153
	AED 059	Introduction à l'observation de la Terre
	AED 060	Evaluations "Safety" sur avion de transport - Aspects généraux pour les systèmes et "Software"
	AED 061	Certification et suivi de navigabilité des moteurs

Aeronautic, Space & Defence

✱	AED 062	Applications de la navigation par satellites : transports, géodésie, agriculture, environnement...
✱	AED 063	Spécifications de certification (CS-25) vol et opérations
✱	AED 064	Spécifications de certification (CS-25) structures
✱	AED 065	Spécifications de certification (CS-25) powerplant
✱	AED 066.1	Processus de certification (PART-21) et introduction aux spécifications de certification (C.S-25)
✱	AED 066.2	Processus de certification (PART-21) et introduction aux spécifications de certification (C.S-25)
✱	AED 067	Spécifications de certification (C,S-25) avionique
✱	AED 068	Spécifications de certification (C.S-25) cabine avion
✱	AED 069	Satellites haut débit : Marché et technologie
✱	AED 071	Découverte des drones. Les différents types de drones à voilure fixe et à voilure tournante
✱	AED 072	Découverte des hélicoptères. Principe du vol et différents types d'aéronefs à voilure tournante
✱	AED 073	Découverte de l'aviation d'affaires. Initiation au domaine et aperçu des classes d'avions
✱	AED 075	Découverte des circuits de bord. Circuits carburant, électrique, hydraulique, conditionnement d'air
✱	AED 076	Découverte des bases de la propulsion. Turbo-réacteurs, turbo-propulseurs et turbo-moteurs
✱	AED 102.1	Initiation aux techniques de l'aéronautique
✱	AED 102.2	Initiation aux techniques de l'aéronautique
✱	AED 131	Notions de systèmes embarqués en aéronautique civile et militaire
✱	AED 132	La maintenance prédictive en aéronautique
✱	AED 133	Les processus industriels et la gestion de configuration avion
✱	AED 134	Processus électrique: dossier de définition
✱	AED 135	A350 Réseau électrique ESN/MBN
✱	AED 136	Alternative à la navigation par satellites
✱	AED 137	Aéronefs plus électriques : De l'électrification à la propulsion

Automotive, Robotics & IT



















✱	ARF 001	Les asservissements linéaires
✱	ARF 002	Commande multivariable appliquée au pilotage automatique d'un avion civil en approche
✱	ARF 003	Commande "robuste" des systèmes
✱	ARF 025	Réseaux embarqués avioniques de nouvelle génération

Electronics & Applications

✱	ELA 004	Communications sol-bord pour l'aviation civile
✱	ELA 005	Récepteurs de mesures et de contre-mesures en radar
✱	ELA 006A	Performances et applications du radar : des principes de base à l'avant projet
✱	ELA 006B	Performances et applications du radar : des principes de base à l'avant projet
✱	ELA 013	Les systèmes radars aéroportés
✱	ELA 023	Internet et multimédia par satellites : les normes DVB et leur application
✱	ELA 024	Télécommunications spatiales
✱	ELA 026	Radio logicielle

Electronics & Technology

✱	ELT 007	Effets de l'environnement spatial sur les composants électroniques embarqués
✱	ELT 009	Initiation aux hyperfréquences
✱	ELT 012	Initiation aux antennes

Fluid mechanics & Acoustics		
	FMA 001	Méthodes Lattice-Boltzmann pour l'aérodynamique et l'aéro-acoustique
	FMA 006	Initiation à l'aérodynamique
	FMA 008	Conception aérodynamique de l'avion
	FMA 013	Initiation aux écoulements visqueux et turbulents
	FMA 015	Simulation et analyse des écoulements internes et externes
	FMA 016	Aérodynamique et performances des machines tournantes
	FMA 019a	Turbomachines aéronautiques : principes, fonctionnement, intégration, certification (1 ^{er} partie)
Mechanical Engineering, Materials & Structures		
	GME 003	Corrosion aéronautique
	GME 004.1	Fatigue des structures aéronautiques : phénomènes physiques, critères, règlement, fiabilité
	GME 004.2	Fatigue des structures aéronautiques : phénomènes physiques, critères, règlement, fiabilité
	GME 005	Le calcul des structures par éléments finis dans un contexte industriel
	GME 006	Dynamique des structures
	GME 008	Bases de la mécanique des structures
	GME 009	Initiation aux charges et structures des avions
	GME 015	Calcul et fabrication de structures en matériaux composites
	GME 023	Les technologies d'assemblage par collage structural
Applied mathematics & Signal processing		
	MTS 004	Machine Learning : une introduction
Systems, Safety & Security		
	SYS 005	Initiation au rôle de responsable d'essais dans le domaine de l'aérospatial

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Executive Education going digital at ISAE-SUPAERO

For the past several years, the Institute has been an environment conducive to “digital learning”. The IDEA (short in French for Digital Innovation for Aerospace Education) is a multidisciplinary skilled team focused on teaching through digital technology. It takes an innovation-oriented approach in the context of R&D activities on technologies for education. IDEA participates in the development of training programs using digital technology and provides support to teachers in conducting digital educational activities.



6 online courses are accessible to the 75 million users of the Coursera digital training platform: Flight Mechanics, Structural dynamics, New Space...



IDEA teams also developed EdTech platforms for ISAE-SUPAERO and beyond!

- ADN (Aerospace Digital Nuggets): Reusable online educational micro contents (less than 30 minutes). They enable educational content to be fragmented in order to address a complex notion for instance.
- NaaS (Nuggets as a Service): This technical-functional ecosystem allows the implementation and dissemination of ADNs based on a service-oriented approach.
- IREAL (Interactive Remote Experimentation for Active Learning): The platform focuses on learning by doing and scientific experimentation. It enables large numbers of students to simultaneously use the experimental devices to access a digitized version of the equipment.



Check out the
IREAL experiments
already online



ECATA:

the European Consortium for Advanced Training in Aerospace. Since 1992, ISAE-SUPAERO has been coordinating the Aerospace Business Integration executive education program.

Every year the ECATA ABI course brings together 20 delegates for 10 weeks of off-the-job training, at ECATA universities, in different countries.

ECATA has developed a unique international training program to help high-potential executives develop their skills in leadership and program management.

For more information, visit ecata.org

Members of the consortium with ISAE-SUPAERO:



EXECUTIVE EDUCATION ISAE-SUPAERO



AERONAUTICS



DIGITAL



PROJECT
MANAGEMENT



SPACE



SYSTEMS
ENGINEERING



info.exed@isae-supero.fr

To register for short courses or Certificates of Advanced Studies, visit our website «Executive Education» section and send us an e-mail.

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