ADVANCED MASTERS IN AEROSPACE ENGINEERING & MANAGEMENT

Post-graduate education for Aeronautics & Space · 2019
A WORLD LEADER
IN AEROSPACE ENGINEERING
HIGHER EDUCATION

We have already trained more than 22,000 engineers who are contributing to the development of the aeronautics and space sector in France and around the world. Our engineers’ vocation is to become future leaders in the aerospace industry and the world of tomorrow. That is why we have developed an integrated approach with training, research and innovation in partnerships with academic players, many industrial stakeholders and a network of the best international universities.

ISAE-SUPAERO
IS A PUBLIC INSTITUTION OF HIGHER EDUCATION AND RESEARCH

A WIDE RANGE OF
DEGREE PROGRAMS IN
AEROSPACE ENGINEERING
THE "INGÉNIEUR ISAE-SUPAERO" (MSC) DEGREE ENGINEERING DEGREE - APPRENTICESHIP PROGRAM MASTER OF SCIENCE IN AEROSPACE ENGINEERING 14 ADVANCED MASTERS PROGRAMS 6 DOCTORAL PROGRAMS (PHD) 5 CERTIFICATES 1700 STUDENTS : 1800 MASTERS AND 200 PhDs 30% FOREIGN STUDENTS 60 NATIONALITIES ARE PRESENT ON CAMPUS AN ACTIVE INTERNATIONAL ALUMNI NETWORK

TOULOUSE, EUROPEAN CAPITAL OF AERONAUTICS AND SPACE

- Nearly 90,000 direct jobs in aeronautics and space
- The leading region in France for aeronautics education and research
- 4th city and university of France: one of the most desirable places to live in France!

Welcome to an exceptional environment in the heart of Toulouse Teaching, living and sports facilities – we have it all. Wide range of sports facilities: pool, a gym, tennis and squash courts, football and rugby fields, rock climbing walls, fitness center... 6 news student residences: 1000 housings, student housing and a dining hall

The ISAE-SUPAERO Toolbox
a student welcome kit to make life easier right from day one: formalities, setting up a bank account, housing, language courses, cultural activities – find out all you need to know and get started right away!
Find out more at: https://toolbox.univ-toulouse.fr (Our Packages > Special packs > ISAE-SUPAERO)
ADVANCED MASTER’S PROGRAM (MASTÈRE SPÉCIALISÉ®)

The «MASTÈRE SPÉCIALISÉ®» is a collective trademark and label owned by the «Conférence des Grandes Ecoles» or CGE, a network of the some of the finest French engineering schools. The highly rigorous accreditation process ensures the excellence of program content. The Advanced Master’s program, taught in English, is a one-year course of professionally-oriented advanced studies, undertaken after completion of a Master’s degree.

CERTIFICATES (CERTIFICATS)

A post-graduate certificate is a short program (one month) leading to a diploma from the institute. This kind of program matches perfectly with professional constraints. Participants may earn ECTS credits upon completion of courses.

EXCITING CAREER PERSPECTIVES

BUSINESS AREAS

- Aeronautics and Space: 88%
- Defence: 2%
- Telecommunications: 1%
- Teaching & Research: 3%
- IT services: 3%
- Transports: 2%
- Others areas: 1%

ACTIVITIES

- Research & development: 9%
- Survey-expertise and consulting: 1%
- Quality & Security: 6%
- Research & development (PhD): 1%
- Maintenance & Support: 3%
- IT maintenance & support: 1%
- Telecommunications, I.T. Networks: 2%
- Methods, production management & manufacturing: 1%
- Administration & Finance: 2%
- Experimental research: 1%
- Industrial property, certification: 2%
- Marketing: 1%
- Others: 1%

LARGE JOB OPPORTUNITIES

- Permanent contract: 80%
- Hired less than 2 months after obtaining the degree: 81%
- Started their career in France. More than 30% work in Toulouse region: 70%

MAIN RECRUITERS

AIRBUS · SAFRAN · THALES · ALTRAN · AKKA · ARIANEGROUP
**AERONAUTICS**

**TAS AERO > AERONAUTICAL ENGINEERING MAJORS AIRCRAFT DESIGN /FLIGHT TEST**

- **OBJECTIVES**
  To ensure participants to develop a high level of competence in engineering science, neuro-ergonomics for human factors, current technologies, design and management of aeronautical systems, or flight test methodologies.

- **CONTENTS**
  Structures and materials - Flight physics - Avionics and systems - Flight test engineering - Aircraft design engineering

- **CAREER OPPORTUNITIES**
  Job research engineer, test engineer or design engineer, consultant Sector: Aerospace industry worldwide

**NEW**

**HADA > HELICOPTER, AIRCRAFT AND DRONE ARCHITECTURE**

- **OBJECTIVES**
  To offer the acquisition of the basic skills required for aeronautical engineers (architecture, certification and structures) and specific skills to identify problems, generate alternatives, choose and implement solutions on aircraft, Helicopters and drones.
  To offer a complete training from systems to structures through aerodynamics, flight dynamics and certification while encouraging and taking into account the diversity of the profiles of the selected students.

- **CONTENTS**
  Aircraft structures, Aircraft architecture and Certification Fixed-wing Aircraft - Helicopter Drone

- **CAREER OPPORTUNITIES**
  This program prepares attendees to a wide range of professional opportunities from design, certification and operations of civil and military aircrafts, drones and helicopters in France and overseas.

**AMS - E&M > AERONAUTICAL MAINTENANCE AND SUPPORT ENGINEERING & MANAGEMENT**

- **OBJECTIVES**
  To prepare participants to face the competitive and fast changing MRO business within the international regulatory framework. To expose participants to the latest techniques and methods, regulation and standards applied in aviation industry. To help participants acquire a wide range of knowledge from engineering fundamentals to maintenance organization management.

- **CONTENTS**

- **CAREER OPPORTUNITIES**
  Management position in aircraft manufacturers, airlines, and MRO organisations on civil market or military forces

**ASAA > AVIATION SAFETY AND AIRCRAFT AIRWORTHINESS**

- **OBJECTIVES**
  To give future managers a broad understanding of the issues and priorities in Airworthiness with a focus on air transport safety from design to operations within the international legal environment. This program covers both technical aspects of certification and the legal and economic implications.

- **CONTENTS**
  Aeronautical techniques and study of aircraft systems - Air Transport safety - Airworthiness

- **CAREER OPPORTUNITIES**
  Various job opportunities either in aircraft manufacturers, or in civil Aviation authorities and airlines: airworthiness inspector, certification manager, Airworthiness follow up, etc.
MAJORS AIRCRAFT DESIGN / FLIGHT TEST
military aircrafts, drones and helicopters in France and overseas.

Aircraft - Helicopter Drone

To ensure participants acquire an in-depth and multidisciplinary culture in mechanical engineering applied to structures.

To train specialists in design, optimization and certification of structures.

To provide expert knowledge in modeling & simulation methods for aircraft and spacecraft structure analysis.

CONTENTS

Aerospace structures: methods & tools for engineering & dynamics - Aerospace systems architecture -
Aerospace structures: dynamics & physics - Aerospace program & technologies

CAREER OPPORTUNITIES
Associate professional in the context of systems design and integration, Manufacturing Process Optimization, systems architect, change leader, in major aerospace companies

SPAL > SYSTÈMES DE PROPULSION AÉROSPATIALE
TAUGHT IN FRENCH

OBJECTIVES

To train propulsion engineers, able to design and operate gas turbines, specialized in internal aerodynamics, with a multidisciplinary knowledge of propulsion systems.

To provide with expert knowledge in energetics, fluid dynamics and aerothermodynamics applied to propulsion systems.

CONTENTS

Propulsive systems and architectures
Advanced fluid dynamics, CFD, aeroelasticity and aeroacoustics
Turbomachinery aerodynamics and design
Combustion and multiphase flows

CAREER OPPORTUNITIES
Engineer positions in all aerospace engine manufacturers in: design, research and development, and testing facilities. Possibility to pursue with PhD.

IEVEX > EXPERIMENTAL FLIGHT TEST ENGINEERING
TAUGHT IN FRENCH

OBJECTIVES

To prepare experienced pilots and engineers selected by EPNER to design, execute and analyze flight tests of aircraft, equipment and airborne systems. - Partner: EPNER

CONTENTS

Aerospace techniques performance tests, propulsion test handling tests, embedded systems tests... 110 flight hours on fixed wing or rotary wing aircraft

CAREER OPPORTUNITIES
Experimental flight test pilot or engineer performing flight tests

AEROSPACE PROJECT MANAGEMENT

OBJECTIVES

To provide high level inter-disciplinary training in space science, space systems engineering and space project management.

To acquire and develop technical skills specific to space systems design.

To understand the international, economic and legal aspects of space programs.

CONTENTS

Missions & systems
Space programs sub-systems: satellites & launchers
SEEDS optional pathway (space exploration)

CAREER OPPORTUNITIES
Research and design engineers in space industry, agencies or laboratories, leading to system or management position of various space applications programs (Earth Observation, Telecommunications, Navigation, Science, Human Spaceflight...)

MANUFACTURING

SYSTEMS ENGINEERING

OBJECTIVES

To provide the international aerospace industry with skilled professionals equipped to specify, design, develop and maintain complex systems.

To develop a system approach with the capacity to federate and manage various, interwoven and complementary activities.

To prepare systems engineers to work in various industrial sectors including space, aeronautics, air traffic control, land transport systems, etc.

CONTENTS


CAREER OPPORTUNITIES
Jobs in Engineering Systems Team within industries in different economic sectors, either in major companies or consulting companies in aircraft, ships, military and defence systems, cars, or other industries developing and producing smaller high technology products (cameras, mobile phones, printers, computers, etc.).

EMS > EMBEDDED SYSTEMS

OBJECTIVES

To prepare embedded systems experts with both system level and functional level design skills.

To develop a system approach through integrated projects to master methods & tools used in aeronautics, space and the automotive sector.

Partner: INP-ENSEEIHT

CONTENTS

Embedded Systems core – Energy - Networks -
Embedded Systems design - Embedded Systems applications

CAREER OPPORTUNITIES
Employment as designer, developer, research engineer including project manager in design and development of innovative embedded systems
MAJORS AIRCRAFT DESIGN /FLIGHT TEST

military aircrafts, drones and helicopters in France and overseas.

Aircraft - Helicopter Drone

taking into account the diversity of the profiles of the selected students.

To offer a complete training from systems to structures through on aircraft, Helicopters and drones.

identify problems, generate alternatives, choose and implement solutions

Structures and materials - Flight physics - Avionics and systems

science, neuro-ergonomics for human factors, current technologies, design

To ensure participants to develop a high level of competence in engineering

TAS AERO

NEW

CONTENTS

OBJECTIVES

HELICOPTER, AIRCRAFT AND DRONE

AERONAUTICS

AERONAUTICAL ENGINEERING

SUPPORT- ENGINEERING & MANAGEMENT

Partners: ENAC, École de l’Air

phones, printers, computers, etc.).

Systems Engineering - Systems Modelling and Analysis - Systems

To prepare systems engineers to work in various industrial sectors

various, interwoven and complementary activities.

To provide the international aerospace industry with skilled professionals

Employment as designer, developer, research engineer

AMS > SPACE APPLICATIONS AND SERVICES

Provide students with the technical knowledge required for the specification of space systems either for telecommunications, Earth observation or positioning services

Enable students to identify the specific constraints of satellite deployment and the key elements of the value chain and business model

Provide students with a broad understanding of space systems to enable them to analyze client needs and design new services

Partner: Airbus Defence and Space.

CONTENTS

Space systems

Satellite-based Earth observation applications and services

Space telecommunications and related services

Space legal, regulatory and economic/business issues

CAREER OPPORTUNITIES

Jobs related to cross disciplinary use of space data in complex information systems

Consulting jobs to identify and define requirements, and implement application solutions using satellites

Jobs related to New Space challenges.

AMPAS > ADVANCED MANUFACTURING PROCESSES FOR AERONAUTICAL STRUCTURES

OBJECTIVES

To prepare participants to take on high level responsibilities in airframe structure manufacturing plants.

To develop technical knowledge of materials science and processes related to supply chain structure and organization.

Partner: IMT Mines Albi

CONTENTS

Aircraft, material and process basic scientific knowledge

Composite structure forming and machining processes

Metallic structure forming and machining processes Industrial organization and management

CAREER OPPORTUNITIES

Positions in subcontracting companies (aircraft manufacturers, aeronautical maintenance companies) as process, industrialization, production, quality, research and innovation engineering, product, project and production manager

SPACE

PROJECT MANAGEMENT

MGP > MANAGEMENT DE GRANDS PROJETS

TAUGHT IN FRENCH

OBJECTIVES

To develop high level skills to manage complex projects in an international environment.

To provide modern methods and practices that allow future leaders to oversee large projects and to estimate performances, risks, quality and costs. - Partner: HEC Paris

CONTENTS

Project management tools and methods

Economics and finance - Intercultural management and negotiation

CAREER OPPORTUNITIES

Project leader, business engineer, consulting manager, expert in logistics, etc.

APM > AEROSPACE PROJECT MANAGEMENT

OBJECTIVES

To prepare participants for an international project management career in the global aerospace and defense industry.

To develop the latest management skills, knowledge and skills to lead international project teams. - Partners: École de l’Air - ENAC

CONTENTS

Overall overview of aerospace industry - Methodology - Economic and financial aspects - Knowledge management in multicultural team project

CAREER OPPORTUNITIES

Head of Aerospace program team, in charge of conception and management of complex projects with permanent care of costs and risks control in Aerospace companies or in defense institutions
CERTIFICATES

AIRCRAFT ENGINEERING FOR CONTINUED AIRWORTHINESS & MAINTENANCE

- **OBJECTIVES**
  To provide students with a deep understanding of aircraft technologies and associated safety issues, in order to properly understand and apply airworthiness rules and offer any pertinent amendment to new or unusual features.

- **CONTENTS**
  - Flight Structures
  - Engines and Powerplant Avionics
  - Aircraft General Systems
  - Qualification tests for on-board systems and equipments (DO 160)

- **DURATION**
  2 certificates of 100-120 hours

HELICOPTER ENGINEERING

- **OBJECTIVES**
  To provide high-level of engineering and technical skills for careers in the helicopter business.

- **CONTENTS**
  - Helicopter Engineering 1 – 90 h
  - Aerodynamics & flight qualities
  - Helicopter dynamics
  - Helicopter construction materials & technics
  - Helicopter Engineering 2 – 60 h
  - Helicopters systems
  - Prototypes - Tests - Production quality assurance

- **DURATION**
  Helicopter Engineering 1 – 90 h
  Helicopter Engineering 2 – 60 h
  Marignane

AIRWORTHINESS & HUMAN FACTORS FOR MAINTENANCE

- **OBJECTIVES**
  To provide a comprehensive knowledge of maintenance and support activities and methods, throughout the entire product life-cycle, with a wide cover of technical, operational, management, logistic support, regulatory and safety aspects.
  To give attendees the necessary knowledge to efficiently work in the competitive and fast-changing MRO worldwide business.

- **CONTENTS**
  - Continuing & continued airworthiness – 35h
  - Safety management system in MRO – 20 h

- **DURATION**
  55h

HUMAN FACTORS AND NEUROERGONOMICS FOR AERONAUTICS & TRANSPORTATION

- **OBJECTIVES**
  To provide participants with a high-level multi-disciplinary approach to understand human behavior and performance. This course focuses on fundamental and applied concepts to design safer and more efficient systems that integrate the human operator into the loop.

- **CONTENTS**
  - Understanding human behaviour: Humans at work
  - Experimentation & Measures
  - Advanced Techniques

- **DURATION**
  100 hours

UAV SYSTEMS

- **OBJECTIVES**
  To provide participants with a full understanding of Unmanned Aerial Systems from design of the system to operation of the system.

- **CONTENTS**
  - Drone systems: design & mission
  - Payload & sensors for UAVs
  - Drone safety & airworthiness
  - Drone guidance & navigation

- **DURATION**
  82 hours

PREPARATION TO PMI CERTIFICATIONS

60 hours of training (in March) taught by experts of PMBOK reference to prepare CAPM or PMP exams
ADMISSION REQUIREMENTS AND APPLICATION

ACADEMIC REQUIREMENTS
A master's degree, or an equivalent degree in science or engineering, or a bachelor degree completed by 3 years of professional experience

ENGLISH LANGUAGE REQUIREMENTS

TOEFL (IBT) or TOEIC or IELTS or CAE/FCE

- 85 points
- 785 points
- 6.5 points
- 170 points

SELECTION AND ADMISSION

Connect you to:

Deadlines for application: Several admission committees are scheduled from February to July 2019, see schedule on our website: https://candidatures.isae-supaero.fr

Funding: Information on tuitions fees and funding can be found on our website: https://www.isae-supaero.fr/en/academics/advanced-masters/financing/

YOUR CONTACTS

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