

## FULL-TIME INGÉNIEUR ENAC (MSC PROGRAMME)

### IN BRIEF

**Type of diploma** : Ingénieur MSc degree

**Ministry field(s)** : Science and Technology

## Presentation

What is an ENAC graduate engineer?

Guaranteed versatility for the aeronautics sector

ENAC graduate engineers get involved in conceiving, designing, implementing and operating systems or services in the air transport and aeronautics industry.

They have a general grounding in air transport, aeronautics and space and cutting-edge expertise in some of these areas: air operations and safety, avionic systems, air traffic management systems and aeronautics and space telecommunications.

In step with their times, they are highly valued by companies who acknowledge their unequalled versatility. They are able to work across a wide variety of professions and therefore to enjoy a guaranteed progressive career.

They work first and foremost in the aerospace industry (designers and manufacturers of aerospace systems), in air transport (airlines, airports), in civil aviation Authorities (DGAC) and a whole host of associated sectors.

## Organization

Year 1

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Semester 5

### MORE INFO

**Level** : Year 5 higher education – Master

**Type of education**

\* Full-time

- *Air Operations Basics (Mandatory)*
  - AE3003 - Aircraft missions
  - SC3001 - Solid mechanics
  - AE3001 - Aerodynamics of flight
- *Airport and Air Traffic Management Basics (Mandatory)*
  - MT3001 - General meteorology
  - CA3001 - Air Traffic Regulation
  - CA3003 - Approach procedures
  - EA3001 - Airport basics
- *Avionics and Telecommunication Basics (Mandatory)*
  - NA3001 - Navigation
  - NA3002 - Conventional radionavigation
  - SP3001 - Introduction to signal processing
  - NA3003 - Satellite Navigation Systems
- *Mathematics (Mandatory)*
  - MA3003 - Complex variable
  - MA3004 - Measure theory
  - MA3006 - Probability
  - MA3002 - Numerical analysis
- *Informatics (Mandatory)*
  - IS3001 - Information systems security basics
  - IP3002 - Programming and algorithmics
  - IP3900 - Programming project
  - CS3001 - Project management
  - IO3002 - Introduction to Unix and Shells
  - IO3001 - Architecture and Operating Systems
- *Professionalization (Mandatory)*
  - ME3001 - "Problem-Based Learning" workshop (PBL)
  - LV3001E - English semester 5
  - DD3000 - Sustainable development
  - EC3001 - General economics
  - EP3001 - Sports
  - LV3001 - French Advanced
  - XX3001 - Become "Ingénieur" Part 1

Semester 6

- *Air Operations and Avionics Basics (Mandatory)*
  - AE3002 - Flight mechanics
  - AV3000 - Modern Air Transport Aircraft Cockpit Environment
  - AU3007 - Autonomous Navigation System
  - AU3001 - Basic principles of automatics
  - AU3002 - Representation of dynamic systems
  - AU3003 - Analysis of dynamic systems
  - OP3900 - Aircraft synthesis project
- *ATM and Aeronautical Telecommunication Basics (Mandatory)*
  - CA3002 - Air Traffic Control Simulation
  - AT3001 - ATM system and its use
  - MO3001 - Waves and aeronautical systems propagation
  - SV3001 - Radar and surveillance
- *Mathematics (Mandatory)*
  - MA3008 - Statistics
  - MA3007 - Combinatorial optimisation
- *Informatics (Mandatory)*
  - IP3000 - Database management system
  - IW3001 - Web application
  - IW3900 - BE Web - Database
  - RS3001 - Networks and communications
- *Professionalization (Mandatory)*
  - CS3002 - Requirements engineering
  - IH3001 - Ergonomics and human factors of interactive systems
  - RG3001 - International Institutions of Civil Aviation
  - EC3002 - International economics
  - EC3003 - Air transport economics
  - LV3002E - English language Semester 6
  - CP3900 - Build your professional project
  - XX3002 - Become "Ingénieur" Part 2
  - SH3001 - Cultural openness workshop
  - EP3002 - Sport
  - TX3990 - End of 3rd year internship
  - SH3900 - Build your professional project

Year 2

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Semester 7

Computer Systems for Air Transport Major

- *Architecture, Operating Systems and Networks (Mandatory)*
  - . IO4001 - Structure of a multiple processors system
  - . IO4002 - Operating system
  - . IO4003 - Unix - Linux commands, filters and shell scripts
  - . RS4001 - Communication networks and interconnexions
- *System and parallel programming (Mandatory)*
  - . IP4005 - System and concurrent programming
  - . IP4007 - Parallel composition, basics
- *Programming and algorithmics (Mandatory)*
  - . IP4003 - Complexity
  - . IP4006 - Imperative and functional programming
  - . IA4001 - Artificial intelligence
  - . IP4901 - Ocaml / AI Project
- *ATM and safety (Mandatory)*
  - . IS4001 - Security of information and communication technologies
  - . CA4003 - Air traffic simulations

#### Avionics Major

- *Informatics and networks (Mandatory)*
  - . IO4001 - Structure of a multiple processors system
  - . IO4002 - Operating system
  - . IO4003 - Unix - Linux commands, filters and shell scripts
  - . RS4001 - Communication networks and interconnexions
  - . RS4005 - Aeronautical networks
- *Linear commands of dynamic systems (Mandatory)*
  - . AU4003 - Command of linear single entry/exit systems
  - . AU4005 - Optimal command
  - . AU4004 - Command of linear multi-entry/exit systems
  - . AU4001 - State estimation
  - . AU4900 - Synthesis project
- *Avionics systems 1 (Mandatory)*
  - . SF4001 - Dependability and safety analysis
  - . AU3007 - Autonomous system navigation
  - . AV4003 - Control and navigation, guide
- *Aircraft knowledge (Mandatory)*
  - . OP4003 - Use limits and flight conduct
  - . AE4005 - Engines
  - . AE4003 - Flight qualities

#### Air Transport Operations and Safety Major

- *Aerotechnics 1 (Mandatory)*
  - AE4007 - Propulsion
  - AE4003 - Flight qualities
  - AU3007 - Autonomous system navigation
- *Air operations (Mandatory)*
  - CA4001 - ATC procedures
  - MT4001 - Aeronautical meteorology
  - OP4001 - Use limits and flight conduct
  - RG4005 - Performances certification
  - OP4901 - Tutored project
- *Aeronautical safety (Mandatory)*
  - RG4006 - Air transport technical regulation
  - RG4007 - Aircraft certification
  - RG4040 - Airworthiness monitoring and maintenance
- *Technical project (Mandatory)*
  - OP4910 - Technical Project

## Space and Aeronautical Telecommunications Major

- *Analogue electronics and networks (Mandatory)*
  - EE4001 - Electronic functions
  - EE4002E - Analog filtering
  - RS4001 - Communication networks and interconnexions
- *Electromagnetism 1 (Mandatory)*
  - CO4001 - Radiocommunications
  - MO4001 - Guided Propagation
  - AU3007 - Autonomous system navigation
- *Signal processing 1 (Mandatory)*
  - SP4002E - Theory and signal processing
  - SP4003E - Digital signal processing

## Minor

- *Avionics Minor (Mandatory)*
  - . AU4000 - Linear Systems Commands
  - . AV4009 - Automatic Flight Controls
  - . IO4000 - Real time informatics for simulation
  - . AV4900 - Avionics project
  - . AV4010 - Avionics principes
- *Flight Operations Minor (Mandatory)*
  - . RG4011 - Air Transport Technical Regulation
  - . OP4005 - Aircraft Operating Limitations & Controls
  - . OP4006 - Airline operations and computer tools
  - . OP4902 - Performance Tutored Project
- *Minor Informatic systems of air transport (Mandatory)*
  - . IW4002 - Object-oriented conception (JAVA)
  - . IP4009 - Object-oriented programming (JAVA)
  - . IA4002 - Artificial intelligence
  - . AT4002 - ATC simulations
  - . AT4001 - ATM concepts
- *Basics UAV Minor (Mandatory)*
  - . UA4001 - UAV Systems and Autonomy
  - . UA4003 - UAV Aircraft Conceptual Design
  - . UA4002 - UAS Integration in airspace and airworthiness
  - . UA4004 - UAV hardware and embedded software
  - . UA4005 - UAV Operations
- *Airport Planning and Design Minor (Mandatory)*
  - . EA4004 - Airport Design and Planning
  - . EA4005 - Airport Design and Planning Project
- *Economics and market organisation Minor (Mandatory)*
  - . EC4006 - Markets' competition
  - . EC4007 - Imperfect competition
  - . EC4008 - Market power analysis
- *Research Introduction Project - Interactive Informatics Team (Mandatory)*
  - . SH302 - Information research methodology
  - . RE4001 - Research Introduction Project - Interactive Informatics Team
- *Entrepreneurship Minor (Mandatory)*
  - . CP4010 - Entrepreneurship project
  - . CP4011 - PITCH
  - . CP4012 - Business Plan
  - . IN4015 - Intellectual property : case study
- *Minor Research Introduction Project - Data, Economy and Interactive Visualization team (Mandatory)*
  - . SH302 - Information research methodology
  - . RE4003 - Research Introduction Project - Data, Economy and Interactive Visualization team
- *Minor Research Introduction Project - Optimization team (Mandatory)*

- SH302 - Information research methodology
- RE4004 - Research Introduction Project - Optimization

team

- *Minor Innovation Project / Challenge (Mandatory)*
  - SH302 - Information research methodology
  - IN4011 - Needs analysis
  - IN4012 - Creativity
  - IN4013 - Prototypage rapide
  - IN4014 - Innovation methods
  - IN4010 - Innovation Project / Challenge
  - IN4015 - Intellectual property : case study
- *Aircraft Conceptual Design Minor (Mandatory)*
  - OP4002 - Design Oriented Air Operations Vision
  - AE4014 - Conceptual definition of plane: heart of domain
  - AE4015 - Conceptual definition of airplane: deepenings
  - CA4004 - New approaches, New tools, perspectives

Common teaching

- *Mathematics and informatics (Mandatory)*
  - IP4000 - Introduction to C language
  - IP4010 - POO Python
  - MA4007 - Stochastic process
  - MA4009 - Non linear optimisation
- *Professionalisation (Mandatory)*
  - LV4001E - Professional English semester 7

Semester 8

Avionics Major



- *Informatics 2 (Mandatory)*
  - IO4005 - System and concurrent programming
  - IO4006 - Input/output mechanism
  - IO4007 - Introduction to industrial data processing
  - IP4001 - Crossed compiling for embedded systems
  - AV4001 - Real-time embedded systems design (1)
  - AV4002 - Architecture of applications and distributed systems (1)
- *Avionics Systems 2 (Mandatory)*
  - CS4001 - Processes of avionics systems engineering
  - CS4002 - Cockpit design
  - IH4011 - Human-Computer Interaction design
- *Regulations (Mandatory)*
  - RG4020 - Introduction to airworthiness
  - RG4004 - Systems engineering and certification
  - CS4004 - Quality/Safety Management System - General points
- *Radiocommunications and electronics (Mandatory)*
  - SP4001 - Signal processing and digital communications
  - MO4005 - Electromagnetic compatibility
  - CO4001 - Radio communication

## Air Transport Operations and Safety Major

- *Aerotechnics 2 (Mandatory)*
  - AE4006 - Theoretical aerodynamics
  - AE4008 - Strength of materials - Cell
- *Systems (Mandatory)*
  - AE4009 - Aircraft circuits
  - AE4013 - Aircraft electrical systems
  - AV4008 - Overviews of flight guidance systems
- *Air operations optimisation (Mandatory)*
  - MA4004 - Operational research for air transport
  - MA4005 - Operational research project for air transport
  - EC4002 - Airlines economics
- *Technical project (Mandatory)*
  - OP4920 - Project

## Space and Aeronautical Telecommunications Major



- *Digital electronics and networks (Mandatory)*
  - EE4003 - Digital electronics
  - RS4002 - Networks and aeronautical communications
- *Electromagnetism 2 (Mandatory)*
  - MO4002 - Antennas
  - MO4003 - Passive microwave systems
  - MO4004E - Propagation channel model
  - MO4005 - Electromagnetic compatibility
- *Signal processing 2 (Mandatory)*
  - SP4004E - Estimation/Detection
  - SP4005 - Signal processor
  - SP4006E - Digital communications
- *SAT project (Mandatory)*
  - SP4900 - Project Aerospace Telecommunications

## Computer Systems for Air Transport Major

- *Fundamental informatics (Mandatory)*
  - IP4002 - Theory of language
  - IP4004 - Compilation
- *Avionics (Mandatory)*
  - RS4002 - Networks and aeronautical communications
  - AV4008 - Overviews of flight guidance systems
- *Interactive systems programming (Mandatory)*
  - IH4002 - Event-driven programming
  - IH4001 - Human-Computer Interaction design
- *Object oriented programming (Mandatory)*
  - IW4001 - Object oriented conception
  - IP4008 - Object oriented programming
  - CS4006 - Informatics project management
  - IP4908 - Air transport applied project
- *Air Traffic Management 2 (Mandatory)*
  - AT4000 - Concepts of ATM (SESAR, NextGen, ASAS, etc.)
  - EC4001 - Economics of ATM

## Minor

- *Airport Operations Minor (Mandatory)*
  - DD4001 - Environment and Sustainable development
  - EC4005 - Airport economics
  - EA4008 - Operation management
  - EA4007 - Operational safety
  - EA4900 - Project
- *Sciences Data minor (Mandatory)*
  - MA4008 - Context, general principles and methodologies of learning
  - MA4010 - Main Supervised and Unsupervised Learning Algorithms
  - MA4011 - Big data architectures, datavisualisation and challenge
  - MA4012 - Big data conferences
- *Minor econometrics and traffic forecast (Mandatory)*
  - EC4010 - Econometrics 1
  - EC4011 - Econometrics 2
  - EC4012 - Traffic forecast
- *Aerospace Telecommunications Minor (Mandatory)*
  - MO4006E - Antennas and propagation for GNSS
  - SP5004E - Kalman filtering
  - NA4001 - Intergity monitoring, augmentation systems
  - NA4003 - Inertial sensors and hybridisation techniques
  - NA4004 - Differential GNSS and precise positioning methods
  - SP4901 - Project
- *Minor Information systems security (Mandatory)*
  - IS4020 - Security governance
  - IS4026 - System and network
  - IS4025 - Secured programming
  - IS4910 - Mini-project
- *Minor Advanced telecommunication systems (Mandatory)*
  - SP4009 - Multiple Input Multiple Output Systems
  - NA4005 - Futur positioning System (Kalman, multilateration, video, SOO)
  - CO4004 - Optical links
  - NA4901 - Software receiver project
  - NA4007E - Space mechanics
- *Entrepreneurship Minor (Mandatory)*
  - CP4001 - Entrepreneurship
- *Minor Research Initiation Project - Drones advanced (Mandatory)*
  - RE4012 - Research Initiation Project - Drones
  - SH302 - Information research methodology
- *Minor Research Introduction Project - Interactive Informatics Team (Mandatory)*

- RE4010 - Research Introduction Project - Interactive Informatics Team
- SH302 - Information research methodology
- *Minor Research Introduction Project - Data, Economy and Interactive Visualization team (Mandatory)*
- RE4014 - Research Introduction Project - Data, Economy and Interactive Visualization team
- SH302 - Information research methodology
- *Minor Research Introduction Project - Optimization team (Mandatory)*
- RE4015 - Research Introduction Project - Optimization team
- SH302 - Information research methodology
- *Minor Innovation Project / Challenge (Mandatory)*
- SH302 - Information research methodology
- IN4011 - Needs analysis
- IN4012 - Creativity
- IN4013 - Prototypage rapide
- IN4014 - Innovation methods
- IN4010 - Innovation Project / Challenge
- IN4015 - Intellectual property : case study
- *Mineure Pir Equipe Resco S9 (Mandatory)*
- SH302 - Information research methodology
- RE4016 - Research Initiation Project - Resco team

Common teachings

- *Professionalisation (Mandatory)*
  - . LV4002E - Semester 8 English
  - . EC4020 - Intellectual Property
  - . CS4010 - Verification and Validation
  - . SH4900 - Recruitment interview
  - . EP4002 - Sports
- *Electives week (Mandatory)*
  - . EC4050 - Buying in aeronautics
  - . LV4050 - English Reinforcement TOEIC - session 1
  - . LV4051 - English Reinforcement TOEIC - session 2
  - . CU4052 - Psychology of desires
  - . CU4053 - AOC - Social psychology
  - . CU4055 - AOC - Improvisation theater session 1
  - . CU4056 - AOC - Improvisational theatre session 2
  - . CU4057 - AOC - Think the work
  - . SH4000 - Air Transport societal issues
  - . AE4050 - Technology Helicopters
  - . SH4052 - Managing an operational team
  - . SH4054 - Management of an operational team
  - . SH4053 - Globalisation
  - . CA4000 - ATM awareness
  - . DD4002 - The challenges of sensitive and remarkable natural areas
    - . CU4059 - AOC - Introduction to the philosophy of technology
    - . CU4054 - Human body representation in 19th and 20th centuries
    - . CU4058 - AOC - Critical mastery of information in the age of fakes news and post-truth
    - . DD4050 - Sustainable development and Societal responsibility within enterprises
    - . SH4051 - International environment and geopolitical stakes
    - . IS4050 - Cyber security in an aeronautical context
    - . AE4012 - Engines

End of Semester 8 - Activity of Professionalization / internationalization

- *Professional insertion internship or international experience (Mandatory)*
  - . TX4990 - Professional Integration Internship
  - . TX4991 - International experience

Year 3

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Semester 9

Avionics Major

- *Informatics and networks (Mandatory)*
  - IP5005 - OOP oriented toward C++ certification
  - CS5010 - Conception of real-time embedded systems (2)
  - RS5006 - Architecture of distributed applications and systems (2)
  - IP5020 - Introduction to object oriented programming C++
- *Flight Controls (Mandatory)*
  - AU5010 - Advanced automatics
  - AU5002 - Chain of command
- *Avionics (Mandatory)*
  - AT5003 - Prediction and optimisation of aircraft trajectory
  - AV5010 - Dependability and supervision
  - AV5004 - Industrial organisation
  - AV5002E - On-board CNS systems
  - MN4001 - Maintenance principles
  - SM4001 - Diagnostic and Monitoring
- *Systems Engineering (Mandatory)*
  - CS5006 - Verification and Validation - Advanced
  - RS5001 - Functional Design
- *Synthesis Project (Mandatory)*
  - AV5900 - Synthesis Project

#### Air Transport Operations and Safety Major

- *Air Operations (Mandatory)*
  - MA5012 - Optimisation under uncertainty
  - MA5014 - Introduction to combinatorial optimization
  - OP5013 - Optimization applied to airlines
  - OP5010 - Airline information system
  - IS5010 - Security of Information System
- *Aerotechnics (Mandatory)*
  - AE5002 - Aircraft sizing
- *Aeronautical Safety (Mandatory)*
  - SF5002 - Dependability assessment
  - RG5002 - Aircraft systems certification
  - RG5003 - Aircraft structures certification
  - RG5004 - Engine and powerplant certification
  - RG5020 - Safety Management System (SMS)
- *Systems (Mandatory)*
  - AV5002E - On-board CNS systems
  - AV5008 - Practical applications on "full flight" cockpit simulator
  - CS5015 - Design Methodology
  - AV5011 - Automatic Flight Controls
- *Quality (Mandatory)*
  - ME5001 - Management by quality
  - ME5002 - Processes and performance Management

#### Space and Aeronautical Telecommunications Major

- *Signal Processing 3 (Mandatory)*
  - SP5005E - Digital receivers
  - SP5009E - Spread spectrum transmissions
  - SP5015E - Antenna processing
  - SP5008 - Channel coding
  - SP5020 - Basics of image processing for space
  - RG5050 - International regulation of telecommunications

conference

- *Aerospace Systems (Mandatory)*
  - SV5002 - Surveillance
  - SP5007E - Space technologies
  - TX4900 - Nano-satellites tutored project
- *ARE Option - Radiofrequency Components (Mandatory)*
  - MO5001 - Antennas in aerospace systems
  - MO5002 - High Frequency Active Systems
- *ARE option - Radiofrequency Theory and simulation (Mandatory)*
  - MO5004 - Advanced Electromagnetism
  - MO5005 - Electromagnetic simulation methods
  - MO5006 - Asymptotic methods for antennas and propagation
- *Signal option - Signal Processing 4 (Mandatory)*
  - SP5011 - Spatial Adaptive processing
  - SP5002E - Parametric modelling
  - SP5010 - Data compression
- *Signal Option - GNSS (Mandatory)*
  - NA5012E - Advanced concepts : GPS L1 C/A Receivers
  - NA5003 - Inertial sensors and hybridisation techniques
  - NA5002 - Integrity control, Augmentation systems
  - NA5011 - GNSS advanced concepts:GNSS positioning
- *Synthesis Project (Mandatory)*
  - TX5903 - Synthesis Project

Computer Systems for Air Transport Major

- *Option IA - Computer science (Mandatory)*
  - IP5020 - Introduction to object oriented programming C++
  - IP5005 - OOP oriented toward C++ certification
  - CS5006 - Verification and Validation - Advanced
- *Option IA - Artificial intelligence (Mandatory)*
  - MA5011 - Complexity
  - IP5002 - Logic programming
  - IP5003 - Constraint programming
  - MA5009 - Machine learning
  - AT5003 - Prediction and optimisation of aircraft trajectory
- *Option ISI - Engineering system (Mandatory)*
  - RS5001 - Functional Design
- *Option ISI - Computer science (Mandatory)*
  - CS5005 - Adaptive systems
  - IP5020 - Introduction to object oriented programming C++
  - CS5006 - Verification and Validation - Advanced
  - IP5005 - OOP oriented toward C++ certification
- *Option ISI - Certification (Mandatory)*
  - CS5001 - ATM Systems Safety Assessments and Certification Issues
- *Synthesis Project (Mandatory)*
  - PT5901 - Synthesis project

Minor



- *Advanced GNSS Minor (Mandatory)*
  - . NA5020E - Future GNSS Programs
  - . NA5021E - Urban Positioning (HS, appli pedestrian, car)
  - . NA5022E - Alternative Positioning
  - . NA5023E - Business in GNSS
  - . NA5920E - GPS L1 C/A Receiver Project
- *Optimisation for Air Transport Minor (Mandatory)*
  - . MA5020 - Stochastic methods for global optimisation
  - . MA5021 - Optimisation applied to air traffic
  - . MA5022 - Graphs and networks
  - . MA5920 - Airport Serious Game
- *Air Transport corporations Strategy Minor (Mandatory)*
  - . EC5020E - Airline strategies
  - . EC5021E - Air transport markets
  - . EC5022E - Pricing and revenue management
- *Airport Planning and Design Minor (Mandatory)*
  - . EA4004 - Airport Design and Planning
  - . EA4005 - Airport Design and Planning Project
- *Minor Economics and markets organization (Mandatory)*
  - . EC4006 - Markets in competition
  - . EC4007 - Imperfect competition
  - . EC4008 - Market power analysis
- *Air Operations Minor (Mandatory)*
  - . RG4011 - Air Transport Technical Regulation
  - . OP4005 - Aircraft Operating Limitations & Controls
  - . OP4006 - Airline operations and computer tools
  - . OP4902 - Performance Tutored Project
- *Research Initiation Project in Econometrics in Networks (Mandatory)*
  - . RE5001 - Research Initiation Project - Econometrics
- *Mineure Pir Equipe Resco S9 (Mandatory)*
  - . SH302 - Information research methodology
  - . RE5003 - PIRRESCO Research Initiation Project - Econometrics
- *Minor Innovation Project / Challenge (Mandatory)*
  - . SH302 - Information research methodology
  - . IN4011 - Needs analysis
  - . IN4012 - Creativity
  - . IN4013 - Prototypage rapide
  - . IN4014 - Innovation methods
  - . IN4015 - Intellectual property : case
  - . IN4010 - Innovation Project / Challenge
- *Entrepreneurship Minor (Mandatory)*
  - . CP4012 - Business Plan
  - . CP4011 - PITCH
  - . CP4010 - Entrepreneurship project
  - . IN4015 - Intellectual property : case

- *Minor Informatic systems of air transport (Mandatory)*
  - IW4002 - Object-oriented conception (JAVA)
  - IP4009 - Object-oriented programming (JAVA)
  - IA4002 - Artificial intelligence
  - AT4002 - ATC simulations
  - AT4001 - ATM concepts
- *Aircraft Conceptual Design Minor (Mandatory)*
  - OP4002 - Design Oriented Air Operations Vision
  - AE4014 - Conceptual definition of plane: heart of domain
  - AE4015 - Conceptual definition of airplane: deepenings
  - CA4004 - New approaches, New tools, perspectives
- *Research Introduction Project - Interactive Informatics Team (Mandatory)*
  - SH302 - Information research methodology
  - RE4001 - Research Introduction Project - Interactive Informatics Team

Common teachings

- *Professionalization (Mandatory)*
  - LV5001E - English
  - DJ5001 - French Labour Law
  - DJ5002 - French Administrative Law
  - EC5010 - Economics and enterprise role play
  - EC5011 - enterprise role play
  - SH5002 - Communicating effectively and managing conflicts
- *Professionalisation (ERASMUS) (Mandatory)*
  - LV5001E - English
  - LV5002 - French language and culture
  - SH5002 - Communicating effectively and managing conflicts
- *Professionnalisation (Mandatory)*
  - LV5001E - English
  - EC5010 - Economics and enterprise role play
- *Specific teachings (Master Operational Research) (Mandatory)*
  - MA5050 - Deterministic Global Optimization
  - MA5051 - Advanced combinatorial optimisation
  - MA5052 - Contemporary topics in optimization
- *Specific teachings (Master "Advanced Communication Systems") (Mandatory)*
  - RS5050 - Advanced technics for wireless telecommunications
  - RS5051 - Aerospace and terrestrial systems Architecture
  - RS5052 - Scientific symposium
- *Specific teachings (Master data and knowledge) (Mandatory)*
  - MA5020 - Stochastic methods for global optimisation
  - IA5050 - Multi-Agent Systems
  - IA5051 - Uncertainty, Reasoning and Decision Modeling
- *Specific teachings (Master IATSED) (Mandatory)*
  - CS5610 - Enterprise Architecture
- *Studyabroad Semester 9 (Mandatory)*
  - XX5001 - Substitutions
- *Semester 10 (Mandatory)*
  - TX5900 - End of studies project

## Access conditions

For more information please click [here](#).

## Organizational unit

ENAC - Ecole nationale de l'aviation civile

## Places



Toulouse

## Contacts

### Responsable pédagogique

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