



In partnership with



AMPAS

Advanced Manufacturing Processes For Aeronautical Structures

The fast and continuous increase of the aeronautical industry market induces a doubling of the number of aircraft by 2030.

Nearly 60% of the turnover is subcontracted all over the world and concerns mostly production and manufacturing activities.

As a consequence, most aeronautical subcontracting companies will have to increase their production rates and keep up to date with technological changes and new materials.

Moreover, subcontractors are increasingly required to manage more complex parts and assume the qualification process themselves.

To satisfy the growing needs of this dynamic sector, enroll in the advanced master AMPAS, designed by Mines Albi and ISAE in conjunction with industrial partners.

Competencies acquired

- General knowledge of flight dynamics constraints and airframe design
- Knowledge and understanding of the airframe materials and processes and their qualification constraints
- Knowledge, understanding and practice of the prevalent processes for structural applications with either metallic or fiber reinforced thermoset composite materials
- Ability to use state of the art simulation tools for definition and optimization of metallic sheet forming and RTM/infusion process
- Knowledge of the aeronautical supply chain structure and their communication rules
- Understand the specific aeronautic quality and management requirements
- Knowledge and practice of lean manufacturing tools
- Ability to undertake manufacturing projects in an international team environment
- Ability to communicate with written reports and oral presentation

Career opportunities

Advanced Manufacturing Processes for Aeronautical Structures Master course offers challenging career opportunities for young engineers or more experienced engineers, who require a postgraduate program to enhance and/or focus their technical and management skills towards aeronautical industry sector.

Career opportunities are numerous and growing over the world, in Tier 1 and Tier 2 subcontracting companies, as well as in aircraft manufacturers, aeronautical maintenance companies. Graduated AMPAS students can find employment in process, industrialization, production, quality, research and innovation engineering, product, project and production management, ...

Admission requirements

Applicants must have a Master's degree, or an equivalent degree in science or engineering, or a bachelor degree with 3 years of professional experience at least.

Calendar

One year in Mines Albi and ISAE (Toulouse).
One intake per year in September.

Contact



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Syllabus

SEMESTER 1

PART 1: Aircraft, material and process basic scientific knowledge

- Flight Dynamic
- Structure and Airframe Design
- Aluminum and titanium alloys
- Epoxy and thermoplastic composites

- Assembly processes
- Material and processes qualification
- NDT for metallic and composite materials
- Optical techniques for assembly aid

PART 2: Composite structure forming and machining processes

- Physical phenomena description and modeling related to thermoset based manufacturing
- Raw material and composite quality control
- LCM/RTM processes

- Autoclave Vacuum Bagging (monolithic - sandwich) processes
- Composite material trimming, drilling and assembly
- RTM/Infusion Simulation

PART 3: Metallic structure forming and machining processes

- Material behaviour and mechanical models
- Cold and hot sheet forming processes
- Surface treatments

- Metallic material machining
- Sheet forming simulation

PART 4: Industrial organization and management

- Supply chain structure and organization
- Materials management and Lean manufacturing

- Supply chain improvement and collaborative processes
- Quality management and tools

PART 5: Integrated Team Project

SEMESTER 2

MASTER THESIS : 6 months



This program is certified and promoted through the Toulouse Tech network.

Details of tuition fees can be found on our website



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