



2ND AND 3RD YEAR SPECIALISATION

AERONAUTICS

With civilian air traffic set to double between 2030 and 2040, aeronautics faces numerous challenges ahead:

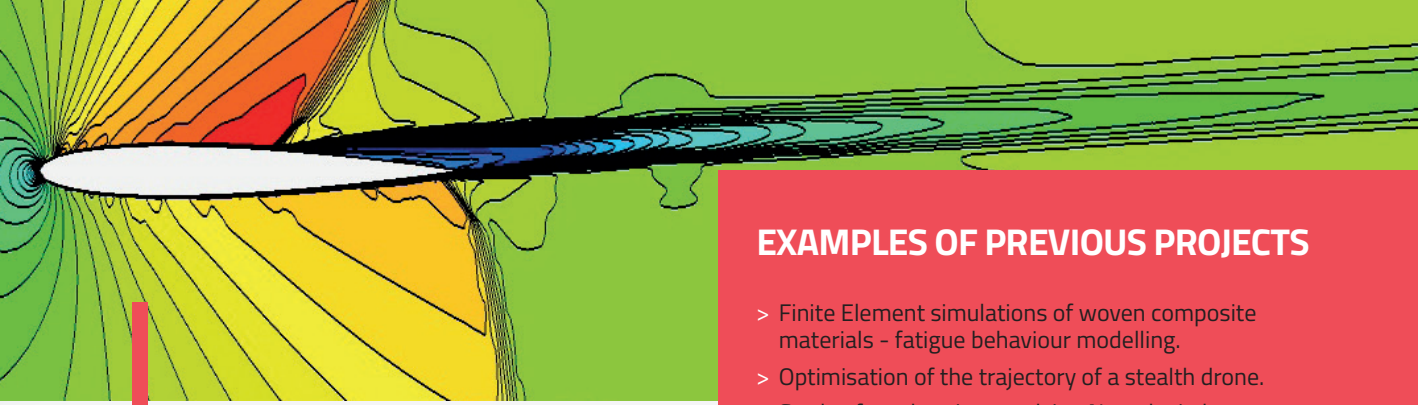
- Technological challenges posed by the need to reduce aircraft consumption: development in aircraft aerodynamics, engine improvements and new lighter, more resistant materials.
- Workforce challenges associated with the specific training requirements in new aeronautical techniques.

The aeronautics specialisation thus incorporates courses in aerodynamics, composite materials and structural calculations.



COURSE CONTENT

- > Gas dynamics
- > Introduction to numerical computation
- > Flight dynamics
- > Aircraft design and construction
- > Computational aerodynamics
- > Aircraft propulsion
- > Turbulence modelling
- > Inviscid aerodynamics
- > Aeroacoustics
- > Structural dynamics
- > Passive safety of aerodynamic structures
- > Aircraft structure modelling
- > Project (80 hours)



INDUSTRY SECTORS

- > Aircraft construction (Airbus, Eurocopter, BAE Systems, Stelia Aerospace, Dassault Aviation, Saab Aerospace).
- > Engine/Component manufacturers (Safran/SNECMA, Turboméca, RollsRoyce, Techspace Aero, DAHER, GKN, Sagem).
- > Research and development (ONERA, Cnes, DLR).
- > Simulation (Thalès, Altran, Dassault Systems).
- > Logistics (Airports).
- > Servicing/Maintenance.

CAREER PROSPECTS

- > research
- > engines
- > materials/structures
- > production
- > design
- > flight testing
- > simulation
- > trade/finance

TEACHING STAFF

HEAD OF SPECIALISATION:

Guy Capdeville

LECTURERS:

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EXAMPLES OF PREVIOUS PROJECTS

- > Finite Element simulations of woven composite materials - fatigue behaviour modelling.
- > Optimisation of the trajectory of a stealth drone.
- > Study of an electric propulsion Nenadovitch-type biplane.
- > Design of a tri-blade propeller made of composite materials for a passenger aircraft.
- > Overall optimization of the aerodynamic performance of a wing profile.
- > Aerodynamic design of a drone
- > Control of the boundary layer separation in the vicinity of a wing
- > Aerodynamic study of a radio-controlled FSJ glider

EXAMPLES OF PREVIOUS INTERNSHIPS

- > Digital study of the impact of birds on turbo reactors (Safran)
- > Characterisation and production of ceramic matrix composites (Polytechnique Montréal)
- > Management and quality of the subcontracting at the Airbus plant in Hamburg (AIRBUS-Hamburg).
- > A350 XWB Airtake Calculation Analysis (Airbus)
- > Implementation of Java code to model a nozzle (Safran)
- > Study and calculations of helicopter blade joints (Airbus)
- > Evaluation and implementation of uncertainty propagation methods, for a robust aerodynamic design of turbomachines (ONERA)
- > Technical study of airport logistics (Airbus)

