

Co-op Program AEROSPACE ENGINEERING



The Université de Sherbrooke's aerospace engineering master's program is focused on skills-based training. This approach aims to go beyond theory and foster the development of skills (building the knowledge, know-how and soft skills that engineers need to properly practice their profession).

Engineers who receive this training are able to participate in the design, development, testing and production of aircraft, spacecraft and associated components. They can manage complex aviation and space engineering projects, and design, carry out and analyze a variety of experimental tests.

WHAT OUR STUDENTS CAN DO FOR YOU

Design

- Design and modification of equipment and machines
- Workstation setup projects
- Reports and layouts
- Feasibility studies, estimates, seeking out suppliers, bid submission and follow-up
- Component design
- Equipment production and installation follow-up

Modelling and simulation

- 3D geometric modelling
- Preliminary analysis with analytical models

Production and maintenance

- Implementation of preventive maintenance systems
- Sampling, quality control and metrology
- Review and resolution of production problems
- Procedure development
- Time and motion studies
- Implementation of methods such as lean manufacturing, Kaizen, 5S, Kanban, etc.
- Staff training
- Floor supervision

Construction

- Preparation and monitoring during factory shutdowns
- Administrative follow-up: preparing purchase orders, etc.
- Inspections and tests
- Project management (MS Project)

Research and Development

- Test mounts and rigs
- Trials and data collection
- Interpretation of results

Other

- Programming (MATLAB, LabVIEW, etc.)
- Process automation
- Computer-aided design / computer-aided manufacturing (CAD/CAM, AutoCAD and SOLIDWORKS)

*Non-accredited co-op program
(accreditation in progress)



KNOWLEDGE AND SKILLS

Term	Description
------	-------------

This program is offered in partnership with the following institutions: Polytechnique Montréal, École de technologie supérieure, Université Laval, McGill University and Concordia University. At least six specialized educational activity credits for the aerospace engineering master's degree must be selected from the activities offered by participating universities.

Students can do one (1) or two (2) work terms as soon as they have completed their first academic term.

Core educational activities – 21 credits

Airframes, airplane aerodynamics, theory of flight, gas turbines and propulsion, aerospace engineering case study.

Elective educational activities – 18 to 24 credits (3 credits per activity)

Study and experimentation	Design of experiments and multivariate analysis, effective engineering communication, specialized study (course III), experimental data processing and frequency analysis, aerospace structures (experimental study), aerospace engineering case study (course II).
Design	Introduction to aeronautics, multivariable control in aerospace, advanced mechanical design, advanced mechatronics control, hydromechanics and application to aeronautics.
Materials, structures and testing	Polymer engineering, digital engineering calculation methods, finite elements in mechanics, airframe monitoring, composite materials, behaviour, optimization and failure of composite structures.
Acoustics and vibration	Acoustics and noise control, fundamentals of acoustics, structural acoustics, computational fluid-structure interaction methods, active noise and vibration control, aeroacoustics.
Aerodynamics and propulsion	Helicopter aerodynamics and performance, turbulence (experimentation and modelling), advanced thermodynamics, advanced heat transfer, continued study of fluid mechanics, experimental thermo-aerodynamics, gas combustion and dynamics, complex flows and fluids.