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Professional Master's Diploma in Aerospace Design Management

The Professional Master's Diploma in Aerospace Design Management arises from the need for aircraft manufacturers and their suppliers to conform to strict certification guidelines on the manufacturing, design, reliability, and systems integration of commercial aircraft. Training on aircraft certification and how it affects the design and manufacturing process is traditionally not provided to any great extend in undergraduate or graduate degree programs. Since the commercial aircraft manufacturing sector is the most heavily regulated and scrutinized of all transportation manufacturing industries, any professional with advanced knowledge of design for certification will be an asset.

The program is aimed at engineers or other technical professionals who wish to advance their careers in aerospace or move into the sector without the commitment to a full master's degree. The program provides understanding of current aircraft certification regulations, reliability analysis, aircraft systems integration, and advanced manufacturing processes. The diploma program is offered from September to April and consists of four courses, with each one running one day per week for twelve consecutive weeks. Courses are provided in the early evening in order to accommodate the schedules of those presently employed. Program courses were created in consultation with the Canadian aerospace industry and with consideration of aircraft certification regulations required by Canadian law. Visit ryerson.ca/aerospacepmd.

Who should register?

The Professional Master's Diploma in Aerospace Design Management is intended for:

- Technical staff employed in the Aerospace sector who wish to upgrade their knowledge of aircraft certification, reliability and safety, systems integration, and manufacturing processes, and do not wish commit to the time and expense of a full master's degree.
- Technical staff employed in the Aerospace sector who wish more in depth training than that provide by corporations
- Technical staff employed in the Aerospace sector who wish to gain further knowledge as a preparation for career advancement.
- Technical staff employed in the Aerospace sector within a small or medium size corporation who need further training to interact more effectively with government and larger corporations on aircraft manufacturing and design contracts
- Individuals with a technical background who wish to enter the aerospace sector and are looking for additional specific training to give themselves an edge.

Admission Requirements

- An undergraduate degree in either Aerospace, Mechanical, or Electrical Engineering,
  AND
- a grade point average or equivalent in the last two years of undergraduate study of 3.00/4.33 or B

Diploma Requirements

The successful completion of four courses and a PMD report.

Recommended Sequence

Students are advised to take the diploma requirements in the following sequence:

Fall Term: AE 8201, AE 8202

Winter Term: AE 8203, AE 8141, PMD Report

Required Courses

AE 8201: Aircraft Certification (Fall)
AE 8202: Aircraft Safety & Reliability (Fall)
AE 8203: Aircraft Systems Integration (Winter)
AE 8141: Advanced Aircraft Manufacturing (Winter)

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Graduation

Once all four courses are successfully completed and the report submission is passed, the student earns a Professional Master's Diploma in Aerospace Design Management.

Courses

AE 8201: Aircraft Certification

The objective of this course is to provide the student with an understanding of Airworthiness and Aircraft Type Certification by examining how the Government of Canada regulates aircraft certification, major manufacturers develop and certify aircraft designs, and leading authorities promote international harmonization. Students will gain a detailed appreciation of how Transport Canada and large aircraft manufacturers together: fulfill their respective roles and responsibilities, identify regulatory requirements and plan certification activities, establish Aircraft design and certification standards, manage certification processes to Approve Aircraft designs, maintain an Airworthiness Control System throughout the lifecycle, validate aircraft designs to and from foreign jurisdictions, and perform oversight of regulated functions and commitments.

AE 8202: Aircraft Safety & Reliability

Assessing aircraft safety is an integral part in the aircraft certification process. This course provides an understanding of Safety, Reliability, and Maintainability principles, and highlights role of the Safety and Reliability in aircraft design for certification and airworthiness. Class exercises include Functional Hazard Assessments, Preliminary System Safety Assessments, Failure Rate Prediction, Failure Modes and Effects Analysis, and Fault Tree Analysis. Principles apply to all types of commercial aircraft certification and may also be adapted for any system safety activity.
The course covers commercial aircraft system safety requirements of FAR 25.1309 from fundamental philosophies and criteria to the analysis techniques to accomplish safety requirements identification, validation, and verification.

AE 8203: Aircraft Systems Integration

This course introduces integration of many key systems found in the design of an aircraft. The course will examine flight control systems, propulsion systems, hydraulic systems, electrical systems, environmental systems, avionics systems and safety systems. The course will consider system integration in the context of system reliability.

AE 8141: Advanced Aircraft Manufacturing

Aerospace manufacturing systems will be introduced at both the system and the machine level. The system level includes conventional systems and emerging systems in terms of product quantity and variety. The machine level includes computer controlled machines and robots. The course will also cover topics on constraints and requirements placed on Aerospace Manufacturing due to regulatory agencies concerned with Aircraft certification and airworthiness.

Diploma Report

As part of the diploma requirements, each student will submit a comprehensive report on a topic of their choosing which encompasses one or more themes of the diploma program. Students can develop an analysis or review of a specific topic that relies on knowledge of aircraft certification, reliability, systems integration, manufacturing, or a combination of these subjects. Students with direct industrial involvement can develop a topic related to their own personal experience. Details of the report length and format will be provided on the Aerospace PMD program website.

For More Information

To apply for the Professional Master's Diploma in Aerospace Design Management, visit **ryerson.ca/gradapply**.

For general inquiries, contact Ms. Leah Rogan at lrogan@ryerson.ca or 416.979.5000, ext. 7733.

For specific program and course information, contact Dr. Paul Walsh, Chair, Department of Aerospace Engineering, at paul.walsh@ryerson.ca or 416.979.5000, ext. 7729.

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