

Area of Interest: Transportation

Aircraft Maintenance Technician

Ontario College Diploma

Program Code: 1522X01FWO

2 Years

Ottawa Campus

Our Program

Propel your intrigue for aviation into a career.

The two-year Aircraft Maintenance Technician Ontario College Diploma program gives you hands-on experience to help propel you into your future. You study at the Ottawa campus as well as at the Canadian Aviation and Space Museum.

Through a series of classroom-based courses and extensive practical labs, you acquire the skills specific to becoming an Aircraft Maintenance Technician. Learn through the repair and maintenance of mechanical and electrical systems within an aircraft, including:

- hydraulics
- fuel systems
- environmental instrumentation
- engine
- control surfaces and undercarriage
- repair of the aircraft body

Because of an expected higher-than-normal retirement rate of licensed Aircraft Maintenance Engineers, and the recent growth in the aviation sector, an increasing number of job opportunities is expected.

To become a licensed Aircraft Maintenance Engineer, Transport Canada requires you to complete two years of basic training at an approved institution followed by 48 months of full-time employment and proof that specific maintenance tasks have been completed. Graduates of this program with high academic standing are eligible for accelerated accreditation by Transport Canada, which provides an 18-month experience credit towards a Transport Canada AME license.

You should be prepared for entry-level positions, which may be available in smaller airports or centres, and may include rotating shift work.

SUCCESS FACTORS

This program is well-suited for students who:

- Possess good communication and interpersonal skills.
- Function well both individually and in a team environment.
- Possess strong problem-solving and analytical skills.
- Are able to effectively handle physically demanding situations.
- Have an appreciation for precise and accurate work.
- Are mechanically inclined.

Employment

Graduates may find employment as an aircraft maintenance technician in areas of local, regional and national manufacturing, maintenance, repair and overall of aircraft and components.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Inspect and service aircraft systems utilizing current and relevant theories and principles.
- Inspect, test, troubleshoot and repair aircraft and components.
- Perform scheduled and unscheduled inspections on aircraft systems, structures, instruments, and related components to airworthiness standards.
- Install aircraft engines, parts, components and structures as part of routine and unscheduled maintenance.
- Diagnose malfunctions or other problems in aircraft systems, structures, instruments, and related components using technical manuals, technical drawings and standards of performance and safety.
- Complete structural and non-structural repairs and modifications by following applicable procedures and safety precautions, and meeting airworthiness standards.
- Perform component analysis using appropriate measuring devices to determine wear and fatigue repair or replacement tasks in order to maintain the aircraft's airworthiness and safety.
- Perform maintenance, repair and modification procedures on aircraft systems, structures, instruments, and related components to maintain aircraft safety and airworthiness.
- Dismantle and reassemble airframes, aircraft engines and other systems for inspection and repair.
- Interpret written instructions, schematics, manufacturer's specifications, technical drawings, manuals, and computer based information while performing routine and unscheduled tasks.
- Maintain detailed inspection, repair, maintenance, and certification records and reports to meet Canadian aviation regulations and logbook requirements.
- Perform all duties in a manner that ensures adherence to Canadian aviation regulations, airworthiness standards and workplace safety.
- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

Level: 01	Courses	Hours
AIR1090	Safety and Human Factors	32.0
AIR1100	Piston Engines and Propellers I	32.0
AIR1110	Sheet Metal and Aircraft Structures	112.0
AIR1120	Introduction to Tools, Materials, and Processes	56.0
AIR1130	Theory of Flight	32.0
AIR1140	Aircraft Publications	32.0
AIR1150	Aircraft Applied Mathematics	40.0

AIR1160	Electrical Fundamentals	88.0
AIR1170	Avionics I	48.0
ENL1813T	Communications I	42.0
Level: 02	Courses	Hours
AIR1350	Turbine Engines I	40.0
AIR1360	Aircraft Hydraulics and Landing Gear	40.0
AIR1370	Canadian Aviation Regulations	40.0
AIR1380	Hangar Maintenance Procedures	80.0
AIR1390	Airframe Systems	80.0
AIR1400	Aircraft Solid State and Data Bus Logic	40.0
AIR1420	Power Generation and Distribution	100.0
AIR1430	Aircraft Instruments	40.0
AIR2490	Advanced Piston Engines	54.0
GEN0351	Strategies for Learning	42.0
Level: 03	Courses	Hours
AIR1410	Avionics II	60.0
AIR2480	Materials and Processes	32.0
AIR2500	Rotary Wing Controls	48.0
AIR2510	Maintenance Procedures I	248.0
AIR2520	Turbine Engines II	32.0
ENL8830	Communications II	42.0
Choose one from equivalencies:	Courses	Hours
GED1522A	General Education Elective	42.0
Level: 04	Courses	Hours
AIR2530	Propellers	40.0
AIR2540	Aircraft Inspection	32.0
AIR2550	M1 and M2 Aircraft System Maintenance	60.0
AIR2560	Maintenance Procedures II	290.0
Choose one from equivalencies:	Courses	Hours
GED1522	General Education Elective	42.0

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at <https://www.algonquincollege.com/fee-estimator> .

Further information on fees can be found by visiting the Registrar's Office website at <https://www.algonquincollege.com/ro> .

Fees are subject to change.

Additional program related expenses include:

- Required tools cost approximately \$1,200 - \$1,500 for the program.
- Books cost approximately \$800.

Admission Requirements for the 2024/2025 Academic Year

College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; OR
- Academic and Career Entrance (ACE) certificate; OR
- General Educational Development (GED) certificate; OR
- Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing for which a fee of \$50 (subject to change) will be charged.

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).
- Mathematics, Grade 12 (MAP4C with a grade of 60% or higher) or Grade 11 (MCF3M with a grade of 50% or higher) or equivalent.
- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).
- IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT) Overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20; OR Duolingo English Test (DET) Overall 110, minimum of 110 in Literacy and no score below 95.

Not sure if you meet all of the requirements? Academic Upgrading may be able to help with that: <https://www.algonquincollege.com/access/> .

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

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Application Information**AIRCRAFT MAINTENANCE TECHNICIAN**
Program Code 1522X01FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Students currently enrolled in an Ontario secondary school should notify their Guidance Office prior to their online application at <http://www.ontariocolleges.ca/> .

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants please visit this link for application process information: <https://algonquincollege.force.com/myACint/> .

For further information on the admissions process, contact:

Registrar's Office
Algonquin College
1385 Woodroffe Ave
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Contact: <https://www.algonquincollege.com/ro>

Additional Information

Some practical labs are scheduled off campus at the Canada Aviation and Space Museum, Transport Canada Aircraft Services, the Rockcliffe Flying Club and at local airports. Students are responsible for transportation and associated costs.

To become a licensed aircraft maintenance engineer, Transport Canada requires an individual to complete two years of basic training at an approved institution followed by 48 months of full-time employment. Students graduating from an approved program may receive 18 months experience credit toward the required 48 months, providing they meet the following criteria:

- attend a minimum of 95% of course hours;
- achieve a grade of 70% or greater in each course;
- complete 100% of all projects.

The program runs in a 16-week term in the Fall, and in a 20-week term in Winter. Start date is one week prior to most other College programs.

Contact Information

Program Coordinator(s)

- Daniel Maslow, <mailto:maslowd@algonquincollege.com> , 613-727-4723, ext. 6531

Course Descriptions

AIR1090 Safety and Human Factors

Possessing the ability to identify and action potential safety issues is paramount in the aviation industry to ensure safety for all. Divided into two segments, students examine fundamental requirements that ensure a safe and effective workplace environment. In the workplace safety segment, students concentrate on issues that arise in aviation environments and Workplace Hazardous Materials Information System (WHMIS) training. In the human factors segment, students develop the knowledge to explain and prevent errors that can occur in an aviation environment.

Prerequisite(s): none
Corerequisite(s):none

AIR1100 Piston Engines and Propellers I

Light aircraft utilize a variety of engines and propellers. Students explore the history and development of piston engines and propellers and learn about engine components and accessories, types of piston engines, associated engine theory, engine ignition systems and operation fundamentals. Students examine basic propeller theory, classification and nomenclature and propeller applications. In practical activities, students identify major engine components, engine lubrication systems and engine characteristics, as well as combustion and valve timing components.

Prerequisite(s): none
Corerequisite(s):none

AIR1110 Sheet Metal and Aircraft Structures

Knowledge of materials and structures used in aircraft manufacturing is key to maintaining modern aircraft. Students examine the characteristics of aluminum alloys, the proper handling and storage of sheet metal, the procedures for the layout, cutting and drilling of sheet metal, the identification and installation of rivets and the inspection and rivet removal techniques. Following appropriate documentation in the airworthiness manual, students review the process required to fabricate a repair on a simulated pressurized skin. With a focus on aircraft structure, students discuss aircraft construction and the parts of an aircraft, as well as stress and load distribution.

Prerequisite(s): none
Corerequisite(s):none

AIR1120 Introduction to Tools, Materials, and Processes

Proper use and safety of tools in the aircraft industry are paramount. Students develop a solid background in the tools and equipment required to maintain aircraft, the materials that are used in the construction and repair of aircraft, and the processes that are used to repair and maintain aircraft and related aeronautical products.

Prerequisite(s): none

Corerequisite(s):none

AIR1130 Theory of Flight

Knowledge of the principles of flight is essential to safety. Students review the physics involved in flight. Through lectures and in-class discussions, students develop knowledge of the operation of an aircraft during flight, as well as on the ground.

Prerequisite(s): none
Corerequisite(s):none

AIR1140 Aircraft Publications

Documentation and publications are an essential part of the regulatory environment of the aviation industry. Students interpret the requirements for, and define the uses of various aircraft publications and documents. Learning resources include maintenance manuals, wiring diagrams, parts catalogues and Canadian Air Regulations.

Prerequisite(s): none
Corerequisite(s):none

AIR1150 Aircraft Applied Mathematics

Much of the daily work of an aircraft maintenance engineer relies on the successful application of mathematical principles. Through lectures and in-class tutorials, students explore basic practical mathematical applications used by aircraft maintenance technicians in the industry, focusing primarily on aircraft weight and balance procedures.

Prerequisite(s): none
Corerequisite(s):none

AIR1160 Electrical Fundamentals

Possessing a fundamental working knowledge of electricity is a required skill in aircraft maintenance. Students develop a working knowledge of electrical formulas, components and circuits. Topics include AC, DC, Ohm's Law, capacitors and resistors, among others. Focus is on the enhancement of electrical skills and knowledge required for aircraft maintenance.

Prerequisite(s): none
Corerequisite(s):none

AIR1170 Avionics I

Knowledge of avionics systems is foundational to maintaining and troubleshooting aircraft. Students explore the array of avionics systems used for aeronautical navigation. Through a modular, structured approach, students examine the theory of operation, components and the indications of each system.

Prerequisite(s): none
Corerequisite(s):none

AIR1350 Turbine Engines I

Large aircraft utilize a variety of turbine engine propulsion systems. Students study the history and development, as well as the types and basic science of turbine engines. Through lectures, videos, textbooks, handouts, and practice, students examine propulsion principles, construction and design, internal air systems, and engine components and accessories. Students also explore concepts related to turbine fuel, system components, auxiliary power units, ignition, engine indicating systems and instrumentation associated with turbine engines.

Prerequisite(s): none
Corerequisite(s):none

AIR1360 Aircraft Hydraulics and Landing Gear

Hydraulics systems are commonly used in aircraft. Students develop the theory and basic skills necessary for inspection of aircraft and aircraft-related components. With the help of lectures and in-class discussion, students develop knowledge and skills required to complete inspections of hydraulic systems, and of aircraft landing gear.

Prerequisite(s): none
Corerequisite(s):none

AIR1370 Canadian Aviation Regulations

Aviation is a highly regulated industry where written and oral workplace communication is critical. Students learn the structure, purpose and applications of the Canadian Aviation Regulations (CARs) as well as examine in detail the relevance of the CARs to the Aircraft Maintenance Engineer (AME), the Approved Maintenance Organization (AMO), and the privileges and responsibilities. Students also explore the philosophical, legal, and moral aspects of aircraft maintenance, aircraft maintenance management and aircraft maintenance quality assurance systems.

Prerequisite(s): none
Corerequisite(s):none

AIR1380 Hangar Maintenance Procedures

Aircraft hangars are a secure, hazard-rich environment where safety and procedures are critical. Students experience the workplace environment of an aviation maintenance engineer first hand. Onsite, students examine the hangar environment and work individually and collaboratively to complete basic aircraft maintenance tasks. Through project-based activities, students cultivate the skills and knowledge required to complete a variety of aircraft maintenance tasks.

Prerequisite(s): AIR1090
Corerequisite(s):none

AIR1390 Airframe Systems

Complex aircraft systems require in-depth knowledge of maintenance and interdependencies. Students explore the structure, design, purpose and maintenance of various systems on board an aircraft. Through class discussion, lecture and hands-on activities in the classroom, students continue to expand abilities in relation to aircraft systems.

Prerequisite(s): none
Corerequisite(s):none

AIR1400 Aircraft Solid State and Data Bus Logic

Aircraft systems function by using electronic components. Students review the construction, and use and testing of semiconductor diodes and transistors. Through theory-based class relying on lectures, discussions and activities, students develop their knowledge of logic gates, numbering systems, data transfer and troubleshooting methods.

Prerequisite(s): AIR1160
Corerequisite(s):none

AIR1410 Avionics II

Inflight communications and autoflight systems are critical to aircraft operations. Students concentrate primarily, but not exclusively, on avionics systems used for communication and autoflight. With the aid of lectures and learning resources, students study the purpose, theory of operation and indications of each system.

Prerequisite(s): none

Corerequisite(s):none

AIR1420 Power Generation and Distribution

Maintenance tasks involving aircraft electrical power generation and distribution systems are not without their challenges and hazards. Students concentrate on generators, batteries, circuit control devices, wiring practices and standard, electrical procedures. With the aid of lectures, discussions, demonstrations and lab projects, students examine the theory, use, troubleshooting and maintenance of various electrical systems.

Prerequisite(s): AIR1160

Corerequisite(s):none

AIR1430 Aircraft Instruments

Modern aircraft employ complex instrumentation systems to provide pilots feedback on systems operations. Students develop a working knowledge of aircraft instruments. Through an exploration of the spectrum of instruments from mechanical/electrical to those that are electronic/computer driven, students use critical thinking to combine preventative maintenance strategies with troubleshooting skills.

Prerequisite(s): none

Corerequisite(s):none

AIR2480 Materials and Processes

Modern aircraft employ a variety of materials in their construction and design. Students learn different methods of aircraft and component construction, aircraft inspection and aircraft repair. Students examine aircraft materials and processes, with an emphasis on wooden structures, fabric coverings, aircraft transparencies and composite materials.

Prerequisite(s): AIR1120

Corerequisite(s):none

AIR2490 Advanced Piston Engines

Many light aircraft use piston engines as a means of propulsion. Students apply knowledge and skills of the operation, maintenance and troubleshooting of piston engines including carburetion, fuel injection, maintenance practices, engine removal/installation and troubleshooting. Through a hands-on classroom environment, students apply their knowledge of the operation, maintenance and troubleshooting principles and practices utilizing various types of tools and equipment.

Prerequisite(s): AIR1100

Corerequisite(s):none

AIR2500 Rotary Wing Controls

The aviation industry in Canada is highly dependent on rotary wing aircraft. Students examine the design, operation, and maintenance of the dynamic components and control systems of rotary wing aircraft including helicopter drive train components, control systems and vibration analysis. Through class discussion and presentations, students develop awareness of rotary wing aircraft.

Prerequisite(s): none

Corerequisite(s):none

AIR2510 Maintenance Procedures I

Aircraft maintenance organizations follow standard operating procedures approved by Transport Canada. Students practise hands-on aircraft maintenance procedures, completing various mandatory performance objectives relating to the approved program curriculum. Through the completion of various maintenance projects, students gain skills and knowledge to complete maintenance performance objectives.

Prerequisite(s): AIR1380
Corerequisite(s):none

AIR2520 Turbine Engines II

Turbine engines consist of a variety of types including turboprop, turbojet and turbofan. Students enhance and apply knowledge and skills of the operation, maintenance and troubleshooting of turbine engines, maintenance practices, engine removal/installation and troubleshooting. The hands-on component provides the student with the opportunity to apply their knowledge of the operation, maintenance, and troubleshooting principles and practices utilizing various types of tools and equipment

Prerequisite(s): AIR1350
Corerequisite(s):none

AIR2530 Propellers

The design and construction of aircraft propellers varies based on the aircraft. Students examine the design and construction of various propellers, including fixed and variable pitch and the associated maintenance required. Through the use of discussions and learning aids, students expand knowledge of aircraft propellers.

Prerequisite(s): none
Corerequisite(s):none

AIR2540 Aircraft Inspection

Conducting scheduled inspections to identify potential airworthiness issues is standard practice in aviation. Students examine the requirements for maintenance on private and commercial aircraft including the minimum required inspection intervals and the associated standards of airworthiness. Focus is on examining industry standards and expectations in relation to aircraft inspection.

Prerequisite(s): none
Corerequisite(s):none

AIR2550 M1 and M2 Aircraft System Maintenance

Type endorsements are a requirement for maintenance releases on light and heavy category aircraft. Aircraft incorporate a variety of environmental, mechanical and safety systems in the design. Students examine M1 (light) and M2 (heavy) aircraft systems. Emphasis is on the inspection, rigging and repair of various types of flight controls, hydraulics, landing gear, environmental, fuel and ice and rain protection systems. In-class discussions, activities and presentations provide students with knowledge of a variety of aircraft systems.

Prerequisite(s): none
Corerequisite(s):none

AIR2560 Maintenance Procedures II

Performance of tasks with a high level of proficiency and attention to detail is required in the aviation industry. Students perform hands-on maintenance procedures, completing various mandatory performance objectives relating to the Transport Canada approved program curriculum. These performance objectives are demonstrated through a variety of maintenance projects performed to applicable airworthiness standards.

Prerequisite(s): AIR2510
Corerequisite(s):none

ENL1813T Communications I

Communication remains an essential skill sought by employers, regardless of discipline or field of

study. Using a practical, vocation-oriented approach, students focus on meeting the requirements of effective communication. Through a combination of lectures, exercises, and independent learning, students practise writing, speaking, reading, listening, locating and documenting information and using technology to communicate professionally. Students develop and strengthen communication skills that contribute to success in both educational and workplace environments.

Prerequisite(s): none
Corerequisite(s):none

ENL8830 Communications II

Clarity, concision and comprehensibility are fundamental features of workplace communication. Through a combination of written assignments and oral presentations, students' ability to create detailed, succinct and coherent communication is developed.

Prerequisite(s): ENL1813T
Corerequisite(s):none

GED1522 General Education Elective

Students choose one course, from a group of general education electives, which meets one of the following five theme requirements: Arts in Society, Civic Life, Social and Cultural Understanding, Personal Understanding, and Science and Technology.

Prerequisite(s): none
Corerequisite(s):none

GED1522A General Education Elective

Students choose one course, from a group of general education electives, which meets one of the following four theme requirements: Arts in Society, Social and Cultural Understanding, Personal Understanding, and Science and Technology.

Prerequisite(s): none
Corerequisite(s):none

GEN0351 Strategies for Learning

Self-Regulated Learning is important not only for academic success but also in the development of lifelong learning skills, and can be defined as an active constructive process whereby learners monitor, regulate, and control their cognition, motivation, and behaviour. Through a variety of assignments and in class activities, students learn how to transform their mental abilities into academic skills by investigating notetaking, time management, goal setting and feedback. Case studies allow students to consider how to employ SRL in their own learning. Students explore effective learning techniques and move toward implementing these techniques to improve their study habits.

Prerequisite(s): none
Corerequisite(s):none