Area of Interest: Transportation and Automotive

**Motive Power Technician**

Ontario College Diploma
42 Weeks
Ottawa Campus

**Our Program**

Gain automotive technical expertise fast, in this condensed program.

The two-year Motive Power Technician Ontario College Diploma program, delivered in a compressed format over 42 weeks, provides you with the skill-set to find an entry-level position in the transportation service industry.

Through a series of classroom-based courses and extensive practical labs, you acquire skills specific to becoming an Automotive Service Technician. Learn to maintain and repair electrical and mechanical systems within a vehicle, including:

- chassis and drivelines
- fuel systems
- electrical systems
- internal combustion engines

Begin by learning the operational principles of systems used on vehicles, with hands-on projects to reinforce your knowledge. As you progress in the program, you focus on the advancement of technical fundamentals, advanced diagnostics, and troubleshooting procedures. You also study mathematics and related sciences, ethics, communications and marketing.

Algonquin College delivers this program in its state-of-the-art Transportation Technology Centre that is outfitted with modern equipment, allowing you to learn using the full range of advanced technology used in today’s motive industry.

Graduates from the program are prepared to enter the workforce immediately. You may find employment as an apprentice technician, a technical advisor, or a parts or service management trainee. You may also become an apprentice warranty claims processor, or a product salesperson in the field.

**SUCCESS FACTORS**

This program is well-suited for students who:

- Enjoy a hands-on approach to learning about the automotive industry.
- Have strong observational and analytical skills.
- Are team-oriented and like to work with others.

**Employment**

Graduates may find employment as apprentice technicians, technical advisors, parts or service management trainees, warranty claims processors and product salespeople in the automotive field. A wide range of employment opportunities may exist, from small garages to large automotive dealerships.

**Learning Outcomes**
The graduate has reliably demonstrated the ability to:

• Analyze, diagnose, and solve various motive power system problems by using problem-solving and critical thinking skills and strategies and by applying fundamental knowledge of motor vehicle operation, components, and their interrelationships.

• Diagnose and repair climate control systems in compliance with manufacturers’ recommendations.

• Diagnose and repair engine systems in compliance with manufacturers’ recommendations.

• Diagnose and repair electrical, electronic, personal safety, and emission components and systems in compliance with manufacturers’ recommendations.

• Diagnose and repair drive train components and systems in compliance with manufacturers’ recommendations.

• Diagnose and repair suspension, steering, and brake components and systems in compliance with manufacturers’ recommendations.

• Disassemble and assemble components to required specifications by applying workshop skills and knowledge of basic shop practices.

• Select and use a variety of troubleshooting techniques and test equipment to assess electronic circuits, vehicle systems, and subsystems.

• Apply knowledge of hydraulics and pneumatics to the testing and analysis of motive power systems and subsystems.

• Communicate information effectively, credibly, and accurately by producing supporting documentation to appropriate standards.

• Use information technology and computer skills to support work in a motive power environment.

• Prepare, support, maintain, and communicate data from log, record, and documentation systems.

• Apply business practices, project management skills, and communication skills to improve customer service.

• Assist in quality-control and quality-assurance programs and procedures.

• Develop and use personal and professional strategies and plans to improve professional growth, job performance, and work relationships.

• Complete all assigned work in compliance with occupational, health, safety, and environmental law; established policies and procedures; codes and regulations; and in accordance with ethical principles.

• 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

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<thead>
<tr>
<th>Level: 01</th>
<th>Courses</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>MAT8520</td>
<td>Mathematics and Related Science I</td>
<td>56.0</td>
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<tr>
<td>MGT8100</td>
<td>Career and College Success Skills</td>
<td>42.0</td>
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<tr>
<td>MVM8402</td>
<td>Chassis and Drivelines I</td>
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<tr>
<td>MVM8403</td>
<td>Fuel and Electrical Systems I</td>
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<td>MVM8409</td>
<td>Applied Workplace Practices</td>
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<td>MVM8463</td>
<td>Internal Combustion Engines I</td>
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<td>WEL9107</td>
<td>Introduction to Fuel Gas and Electrical Welding</td>
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### Motive Power Technician

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<tr>
<th>Level: 02</th>
<th>Courses</th>
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<tr>
<td>ENL1813T</td>
<td>Communications I</td>
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<tr>
<td>MAT8521</td>
<td>Mathematics and Related Science II</td>
<td>56.0</td>
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<td>MVM8404</td>
<td>Chassis and Drivelines II</td>
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<td>MVM8435</td>
<td>Fuel and Electrical Systems II</td>
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<tr>
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<td>Internal Combustion Engines II</td>
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**Choose one from equivalencies:**

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<tr>
<th>Course</th>
<th>Description</th>
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<tr>
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<tr>
<td>MKT2230</td>
<td>Introduction to Marketing</td>
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<tr>
<td>MVM8405</td>
<td>Chassis and Drivelines III</td>
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<td>Fuel and Electrical Systems III</td>
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<td>Internal Combustion Engines III</td>
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<td>MVM8810</td>
<td>Automotive Technology - Driving Change in Manufacturing</td>
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**Fees for the 2020/2021 Academic Year**

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](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](https://www.algonquincollege.com/ro).

Fees are subject to change.

Additional program related expenses include:

- Books and supplies cost approximately $400 per term. Supplies can be purchased at the campus store. See [https://www.algonquincollege.com/coursematerials/](https://www.algonquincollege.com/coursematerials/) for more information about books.

- Students are required to supply their own safety boots and safety glasses. (All students are responsible to supply their own CSA-approved leather steel toe work boots. Any other types of footwear are not acceptable).

**Admission Requirements for the 2021/2022 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 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).
Motive Power Technician

- 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.

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.

Admission Requirements for 2020/2021 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
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- 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 or equivalent).
- International applicants must provide proof of the subject specific requirements noted above along with proof of either: (IELTS / TOEFL) 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.
- Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency.

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.

Application Information

MOTIVE POWER TECHNICIAN
Program Code 0557A04FWO

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
Additional Information

Programs at Algonquin College are Bring Your Own Device (BYOD). To see the BYOD requirements for your program, please visit: https://www7.algonquincollege.com/byod/.

A passing grade in Level 1 MVM8402, MVM8403, MVM8409, and MVM8463 is 60%. A student who does not achieve 60% in these courses will not progress to the next level.

A passing grade in Level 2 MVM8404, MVM8435, and MVM8436 is 60%. A student who does not achieve 60% in these courses will not progress to the next level.

Graduates of the Motive Power Technician program are eligible for exemption from Level 1 and 2 automotive apprenticeship.

For more information, please contact one of the following program coordinators:

- Jason Glennon, 613-727-4723 ext. 6516, mailto:glennoj@algonquincollege.com
- Wade Foster, 613-727-4723 ext. 2949, mailto:fosterw@algonquincollege.com

Course Descriptions

**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

**ENL2003 Communications II for Technicians**

Communicating effectively in the workplace is a key component of career advancement and essential skills development. The ability to read, understand, reframe and deliver technical information to varied audiences is critical in a competitive marketplace. Students are exposed to a variety of common communication challenges related to working in their field of study. To meet these challenges, students are required to do basic research and data gathering, to summarize and reframe written, oral and visual information and to present their findings to a defined audience in an appropriate medium or media.

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

**GED0557 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
MAT8520 Mathematics and Related Science I

The automotive trade has a long and rich history based on many scientific principles from thermodynamics and the creation of the combustion engine to shocks and conservation of energy. Students develop the skills to efficiently add, subtract, multiply and divide decimals and fractions, as well as to calculate distances, areas and volumes. They solve ratio and proportion problems and use percent and percentages to solve tax, sales and mark-up problems. Metric units and temperature conversions are examined. Students use ratio and proportion for solving problems dealing with gear ratios, overall drive ratios and planetary gear ratios.

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

MAT8521 Mathematics and Related Science II

The automotive trade has a long and rich history based on many scientific principles from thermodynamics and the creation of the combustion engine to shocks and conservation of energy. Students develop the skills to calculate torque and horsepower of a crankshaft, and calculate air/fuel ratios and the efficiency of an engine. Students investigate the displacement and compression ratios of engines. Students explore basic math operations along with algebra to solve equations for force, pressure, area and flow rate. They investigate electric circuits and Ohm’s law to solve for current, voltage and resistance. Students are introduced to the relationship between speed and acceleration, how Newton’s Laws apply to the automotive industry, and the calculation of energy and work.

Prerequisite(s): MAT8520
Corerequisite(s): none

MGT8100 Career and College Success Skills

To succeed at college, in the workforce, and in the community, we must adapt to changing environments, manage our time effectively, study efficiently, think independently and make difficult decisions. At the same time, we are often required to collaborate and cooperate with others, make use of available resources and services, cope with pressure and take responsibility for our learning and actions. Through discussions, assignments, and group work, students develop and apply these skills in a supportive and collaborative learning environment.

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

MKT2230 Introduction to Marketing

Students gain basic marketing skills and concepts. While an overview of the entire marketing process is provided, emphasis is on the consumer market. The acquisition of skills and attitudes essential to promoting customer satisfaction through positive perspectives is also emphasized.

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

MVM8402 Chassis and Drivelines I

Students are introduced to the driveline and suspension, steering and braking systems of motor vehicles. Students perform minor service operations under the supervision of a certified technician.

Prerequisite(s): none
Corerequisite(s): MVM8403 and MVM8409 and MVM8463

MVM8403 Fuel and Electrical Systems I

Students learn the principles of electricity, electronics and fuel systems as used in modern automobiles. Students study DC circuitry, fuel principles and fuel delivery systems. Students identify fuel and electrical systems and their components. Students complete minor repairs and adjustments under the supervision of a certified technician.
Prerequisite(s): none
Corequisite(s): MVM8402 and MVM8409 and MVM8463

**MVM8404 Chassis and Drivelines II**

Students study automotive brake, steering and suspension systems servicing procedures. Course includes fault-finding and an introduction to air conditioning, automatic transmissions and alignment.

Prerequisite(s): MVM8402
Corequisite(s): MVM8435 and MVM8436

**MVM8405 Chassis and Drivelines III**

Students diagnose faults with the brake, suspension and air-conditioning systems. They also expand their knowledge of automatic transmission systems and are introduced to the operation, and servicing of anti-lock brake and traction control systems.

Prerequisite(s): MVM8404
Corequisite(s): MVM8406 and MVM8407

**MVM8406 Fuel and Electrical Systems III**

Students expand their knowledge base and improve their diagnostic skills in computerized engine management and selected chassis electrical/electronic systems. Topics covered include ignition, gasoline fuel injection and emission control. Students also study topics, such as supplemental inflatable restraint, power accessories and electronic options.

Prerequisite(s): MVM8435
Corequisite(s): MVM8405 and MVM8407

**MVM8407 Internal Combustion Engines III**

Students gain the practical skills and theoretical knowledge to conduct performance testing and carry out repairs to valve trains of internal combustion engines. Topics include compression testing, cooling service, removal and installation of cylinder heads, camshaft and valve train components.

Prerequisite(s): MVM8436
Corequisite(s): MVM8405 and MVM8406

**MVM8409 Applied Workplace Practices**

Students study Workplace Hazardous Materials Information System (WHMIS) and safe work practices. Information on procedures related to fasteners, bearings, seals and sealants are covered. Students also learn to apply electronic processing of client information databases and technical information retrieval situation as experienced in a transportation service environment.

Prerequisite(s): none
Corequisite(s): MVM8402 and MVM8403 and MVM8463

**MVM8435 Fuel and Electrical Systems II**

Students enhance their skills in electrical and electronics diagnosis and repair and are introduced to internal combustion engine fuels used in modern automobiles. Included is the study of construction, operation, and diagnostic routine used in assessment of starter systems and charging systems. Other topics covered are fuel injected fuel supply systems, engine management and ignition systems.

Prerequisite(s): MVM8403
Corequisite(s): MVM8404 and MVM8436
MVM8436 Internal Combustion Engines II

Students gain practical skills and theoretical knowledge to conduct inspections and perform service to cylinder blocks, rotating shafts and bearings, connecting rods, and piston assemblies, as well as cam drives and lash adjusters.

Prerequisite(s): MVM8463
Corerequisite(s): MVM8404 and MVM8435

MVM8463 Internal Combustion Engines I

The construction and operating principles of the internal combustion engine are introduced. Students study 4-stroke and 2-stroke cycles as applied to diesel and gasoline engines and minor service of lubrication and cooling systems. Students perform minor service operations related to the lubrication and cooling systems of internal combustion engines under the supervision of a certified technician.

Prerequisite(s): none
Corerequisite(s): MVM8402 and MVM8403 and MVM8409

MVM8810 Automotive Technology - Driving Change in Manufacturing

Developments in automotive technology and manufacturing processes have driven changes across the economy. From the assembly line to global positioning systems, automotive companies have led the way in the application of new technologies. Through a combination of activities, assignments, discussions and tests, students explore historical and contemporary automotive manufacturing processes in addition to innovations in car design and production.

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

WEL9107 Introduction to Fuel Gas and Electrical Welding

Welding is a skill essential to a variety of professions. Students develop competent welding skills at a basic level using oxyacetylene equipment, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding, (GMAW) and Gas Tungsten Arc Welding (GTAW). Students are provided with instructions on the safety, proper setup and operation of equipment. Students learn basic principles of flame types and temperatures, metal preparation, gas selection and electrode classification.

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