

# MECHANICAL TECHNIQUES - SMALL ENGINE MECHANIC

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## Program Outline

<b>Major:</b>	MTSE
<b>Length:</b>	1 Year
<b>Delivery:</b>	2 Semesters
<b>Credential:</b>	Ontario College Certificate
<b>Effective:</b>	2014-2015
<b>Location:</b>	Midland
<b>Start:</b>	Fall (Midland)

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### Description

This one-year post secondary certificate program prepares an individual for a career as a Small Engine Mechanic, or further education in a related field. This program offers a concentrated understanding of 2 and 4 stroke cycle engine principles and design, with a significant hands-on component that will allow individuals to develop practical and technical skills to meet the current needs of the outdoor power products service industry, and that will provide a basis to respond to emerging trends in the field. Finally, students will become effective communicators and problem solvers who will have an awareness of environmental issues, effective customer service, and basic business operations. Once the one-year certificate has been achieved, the graduate may return for further specialization.

### Career Opportunities

Graduates may find a range of occupations in the mechanical field, including manufacturing, dealers, operations, sales, service, and self-employment. A graduate may find employment in outdoor power equipment service and operations, outdoor power equipment dealerships, manufacturing, and parts and accessories.

### Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- use effective communication and interpersonal skills to facilitate customer service;
- work effectively as an individual and team member in the mechanical service industry;
- utilize current technology to access information in the mechanical service industry;
- role model professional behaviour consistent with ethical and legal integrity in the workplace;
- incorporate analytical thinking to implement a systematic approach to problem solving and decision making, for the purpose of engine and equipment systems repair and service;
- incorporate the principles of customer service specific to the mechanical service industry;
- select and utilize appropriate tools and equipment to assess and repair outdoor power equipment engines and their support systems.

### **The Program Progression:**

Fall Intake - Midland

Sem 1 | Sem 2

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Fall | Winter

2014 | 2015

### **Articulation:**

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at <http://www.georgianc.on.ca/academics/articulations/>

### **Admission Requirements:**

You must meet ONE of the following requirements to be eligible for admission to these programs:

Secondary school applicants:

- OSS curriculum: OSSD or equivalent with Grade 12 English (C) or (U) (ENG4C, ENG4U); plus any Grade 11\* or 12 college level mathematics (MBF3C, MAP4C or MCT4C) or 11\* or 12 university level mathematics (MCF3M, MCV4U, MHF4U, MCB4U, MGA4U or

MDM4U) (\*Minimum of 60% in Grade 11 college or university level mathematics MBF3C or MCF3M)

Non-Secondary school applicants (19 years or older):

- Any credit Communication course and most credit mathematics courses taken at Georgian College
- Most college preparatory programs including those taken at Georgian College: Technology Foundation, Technology Fundamentals and General Arts and Science\*
- Equivalent courses in English and Mathematics taken through secondary school or Independent Learning Centres (at the general, advanced, college or university level)
- Academic and Career Entrance Certificate (ACE) program with communications and mathematics
- Mature student testing in English and Mathematics that meets the minimum standards for admission (available through most testing services)\*
- Ontario High School Equivalency Certificate (GED)
- English, Literature or Communication credit courses and most Mathematics credit courses from accredited colleges/universities

Home school applicants:

- Applicants can write the mature student testing in English and Mathematics that meets the minimum standards for admission (available through testing services)\*

\* available from Georgian College. For a complete listing please contact the Office of the Registrar.

Non-secondary school applicants who are 19 years of age or over by the first day of classes, and who lack the academic entrance qualifications, may be considered for entrance to an appropriate post-secondary diploma or certificate program as mature applicants. Mature applicants must meet all program specific prerequisites including all selection criteria; equivalencies are stated above. Applicants who are unsure whether they meet admission requirements should contact the Office of the Registrar. In addition, those applying as mature students and having no documentation of Grade 12 education must supply, if required, proof of age, such as a copy of an official birth certificate or driver's licence. Refer to Section 2.5 and 2.6 of the Academic Calendar for further details.

Credit transfer and course exemptions:

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may be eligible for credit transfer/course exemptions. Courses/experience must match at least 80% of the learning outcomes of a Georgian College course with a minimum grade of 60% or C achieved in previous coursework; some program exceptions apply (see program outline). For further information please visit the Credit Transfer Centre website: [georgiancollege.ca/admissions/credit-transfer/](http://georgiancollege.ca/admissions/credit-transfer/)

**Additional Information:**

The very nature of the work requires manual dexterity and lifting. Applicants are advised to consult with the Program Co-ordinator if they have specific questions related to the physical demands of the program and future employment.

**Graduation Requirements:****11 Mandatory Courses**

- 1 Communications Course
- 2 Optional Courses
- 1 Field Placement

**Graduation Eligibility:**

To graduate from this program, the passing weighted average for promotion through each semester, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

**Mandatory Courses**

MATH1007 Mathematics Techniques  
MENG1000 Workshop Procedures  
MENG1001 Engine Fuel Systems Principles  
MENG1002 Engine Electrical Systems Diagnostics  
MENG1003 Engine Function and Design  
MENG1009 Basic Electrical Principles  
MENG1011 Health and Safety Fundamentals  
SENG1000 Outdoor Power Tool Fundamentals  
SENG1001 ATV Repair Principles  
SENG1002 Principles of Residential Grounds Maintenance Equipment  
SENG1003 Snowmobile Repair Principles

**Communications Course**

To be selected at time of registration from the College list, as determined by testing.

**Optional Courses**

BUSI1004 Service and Information Techniques  
MENG1010 Diesel and Overhead Valve Engines

MENG1015 Gas Metal Arc Welding  
MENG1016 Gas Tungsten Arc Welding

Field Placement  
SENG1004 Field Placement - MTSE

**Course Descriptions:**

BUSI1004 Service and Information Techniques 42.0 Hours

This course provides the student with an overview of customer service and small business operations. It also provides the student with an understanding of electronic parts catalogues, service manuals, and technical information access via the Internet.

MATH1007 Mathematics Techniques 42.0 Hours

This is a consolidation and review of the principles and techniques of mathematics, which are required for the technical trades. Developing and promoting the use of mental arithmetic, estimation skills, problem solving, and reasoning skills.

MENG1000 Workshop Procedures 42.0 Hours

This course will provide the student with the necessary knowledge and skills to perform essential mechanical workshop duties. Function and safe use of hand and select power tools, measurement devices, and related equipment for the technical trades will be emphasized.

MENG1001 Engine Fuel Systems Principles 42.0 Hours

This course provides the student with an understanding of common internal combustion engine fuels, fuel supply, and fuel management systems. It also provides the student with access to relative engine fuel system manufacturer information technology.

MENG1002 Engine Electrical Systems Diagnostics 42.0 Hours

This course provides the student with an understanding of the nature of electricity and its function relating to common internal combustion engines. It also provides the student with a comprehension of electrical system diagnostics and testing procedures.

MENG1003 Engine Function and Design 42.0 Hours

This course provides the student with an understanding of the design and function of common internal combustion engines and components relative to their operation. It also provides the student with access to relative engine manufacturer information technology.

MENG1009 Basic Electrical Principles 42.0 Hours

This course introduces the student to the basic concepts of electricity. The electrical circuit is the fundamental building block for these concepts. With these concepts and OHMS law the behaviour of most electrical components will be understood.

**MENG1010 Diesel and Overhead Valve Engines 42.0 Hours**

This course covers the theory and operating principles of diesel and overhead valve engines. This course also develops the skills to diagnose, disassemble, analyze and repair the diesel and overhead valve engines and the components relative to their operation.

**MENG1011 Health and Safety Fundamentals 42.0 Hours**

This course introduces the student to basic fundamentals of safety in the workplace, sound environmental procedures in and around the workplace and home safety. It will assist the student in identifying personal health and safety concerns and problems in the environment.

**MENG1015 Gas Metal Arc Welding 84.0 Hours**

In this course students learn how to use the Gas Metal Arc Welding (GMAW) process on mild steel, stainless steel and aluminum. Students also learn the application of Flux Cored Arc Welding (FCAW). Throughout the course safety principles and equipment requirements of GMAW are emphasized. Students successfully completing this course will be eligible to take the Canadian Welding Bureau Certificate test (CWB).

**MENG1016 Gas Tungsten Arc Welding 42.0 Hours**

In this course students learn the Gas Tungsten Arc Welding (GTAW) process. They complete welding projects on mild steel, stainless steel and aluminum to acceptable industry standards. Throughout the course safety principles and equipment requirements are emphasized.

**SENG1000 Outdoor Power Tool Fundamentals 42.0 Hours**

This course provides the student with an understanding of the repair and general maintenance of common outdoor power tools and the systems and components relative to their operation. It also reinforces the use of information systems, specialty tools, and equipment during the practical repair section.

**SENG1001 ATV Repair Principles 42.0 Hours**

This course provides the student with an understanding of the repair and general maintenance of common All Terrain Vehicles and systems and components relative to their operation. It also reinforces the use of information systems, specialty tools, and equipment during the practical repair section.

**SENG1002 Principles of Residential Grounds Maintenance Equipment 42.0 Hours**

This course provides the student with an understanding of common types of residential grounds maintenance equipment and the system and components relative to their

operation. It also reinforces the use of information systems, specialty tools, and equipment during the practical repair section.

**SENG1003 Snowmobile Repair Principles 42.0 Hours**

This course provides the student with an understanding of the repair and general maintenance of common snowmobiles and the systems and components relative to their operation. It also reinforces the use of information systems, specialty tools, and equipment during the practical repair section.

**SENG1004 Field Placement - MTSE 160.0 Hours**

Students are placed in field related agencies to apply their previously learned skills under the direction and supervision of a qualified professional.

C- BUSI1004 Service and Information Techniques and P- MENG1000 Workshop Procedures and P- MENG1003 Engine Function and Design and P- MENG1001 Engine Fuel Systems Principles and P- MENG1002 Engine Electrical Systems Diagnostics and C- SENG1003 Snowmobile Repair Principles and C- SENG1000 Outdoor Power Tool Fundamentals and C- SENG1002 Principles of Residential Grounds Maintenance Equipment and C- SENG1001 ATV Repair Principles and C- MENG1010 Diesel and Overhead Valve Engines and P- MENG1009 Basic Electrical Principles and P- MENG1011 Health and Safety Fundamentals

**Course Description Legend**

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

*Information contained in College documents respecting programs is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.*