

# **MECHANICAL TECHNIQUES - MARINE ENGINE MECHANIC**

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## **Program Outline**

<b>Major:</b>	MTME
<b>Length:</b>	1 Year
<b>Delivery:</b>	2 Semesters
<b>Credential:</b>	Ontario College Certificate
<b>Effective:</b>	2017-2018
<b>Location:</b>	Midland
<b>Start:</b>	Fall (Midland)

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### **Description**

In this program, students prepare for a career as a Marine Engine Mechanic, or further education in a related field. Students develop a concentrated understanding of marine and watercraft systems. This includes gasoline and diesel engines, fuel management systems, engine electrical systems, marine direct current electrical systems, steering and hydraulic systems, drives, and propulsion systems. A significant hands-on component allows students to develop practical and technical skills to meet the current needs of the Recreational Marine industry, and provides a basis to respond to emerging trends in the field. Finally, students become effective communicators and problem solvers who have an awareness of environmental issues, effective customer service, and basic business operations. Upon completion, the graduate may return for additional technical training and 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 as a Marine Engine Technician Apprentice, retail sales support, marina operations, in water and out of water boat handling. They may also opt to return to school for additional technical training and specialization.

## Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- complete all work in compliance with current legislation, standards, regulations and guidelines;
- contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements;
- comply with current health and safety legislation, as well as organizational practices and procedures;
- support sustainability best practices in workplaces;
- use current and emerging technologies to support the implementation of mechanical and manufacturing projects;
- troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics;
- contribute to the interpretation and preparation of mechanical drawings and other related technical documents;
- perform routine technical measurements accurately using appropriate instruments and equipment;
- assist in manufacturing, assembling, maintaining and repairing mechanical components according to required specifications;
- select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components;
- role model professional behavior consistent with environmental stewardship;
- apply basic entrepreneurial strategies when considering new business opportunities.

## The Program Progression:

Fall Intake - Midland

Sem 1 | Sem 2

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Fall | Winter

2017 | 2018

## 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.georgiancollege.ca/admissions/credit-transfer/>

**Admission Requirements:**

OSSD or equivalent with

- Grade 12 English (C or U)
- any Grade 11\* or 12 Mathematics (C, M, or U)

\*Minimum of 60% in Grade 11 College or University level Mathematics (MBF3C or MCF3M)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: [www.georgiancollege.ca/admissions/policies-procedures/](http://www.georgiancollege.ca/admissions/policies-procedures/)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit Transfer Centre website for details:  
[www.georgiancollege.ca/admissions/credit-transfer/](http://www.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:**

- 13 Mandatory Courses
- 1 Communications Course
- 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

BUSI1004 Service and Information Techniques  
MARE1000 Alternate Marine Propulsion Systems  
MARE1001 Recreational Boat Principles  
MARE1002 Stern Drive System Repair Principles  
MARE1003 Outboard Motor Repair Principles  
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  
MENG1010 Diesel and Overhead Valve Engines  
MENG1011 Health and Safety Fundamentals

### Communications Course

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

### Field Placement

MARE1020 Field Placement - MTME

### Course Descriptions:

BUSI1004 Service and Information Techniques 42.0 Hours

In this course, students gain an overview of customer service and small business operations. Students also develop an understanding of electronic parts catalogues, service manuals, and technical information access via the Internet.

MARE1000 Alternate Marine Propulsion Systems 42.0 Hours

Students are provided with an understanding of the repair and maintenance of common alternate marine propulsion units, including inboard and jet drive configurations, and the systems and components relative to their operation. The use of information systems, specialty tools, and equipment during the practical repair section are developed and reinforced.

MARE1001 Recreational Boat Principles 42.0 Hours

In this course, students explore common recreational boat terms and definitions, transportation, land storage methods, extended storage procedures, and common onboard operational systems. The use of information systems, specialty tools, and equipment during the practical repair section are developed and reinforced.

#### MARE1002 Stern Drive System Repair Principles 42.0 Hours

In this course, students develop an understanding of the repair and general maintenance of common stern drive propulsion units and systems, and components relative to their operation. The use of information systems, specialty tools, and equipment during the practical repair section are developed and reinforced.

#### MARE1003 Outboard Motor Repair Principles 42.0 Hours

In this course, students are provided with an understanding of the repair and general maintenance of common outboard motors and systems and components relative to their operation. The use of information systems, specialty tools, and equipment during the practical repair section are reinforced.

#### MARE1020 Field Placement - MTME 160.0 Hours

In this course, students are placed in field related agencies to apply their previously learned skills under the direction and supervision of a qualified professional. As well, field placement learning is reviewed and consolidated in classroom sessions as determined by the instructor.

P- MENG1000 Workshop Procedures and P- MENG1001 Engine Fuel Systems Principles and P- MENG1002 Engine Electrical Systems Diagnostics and P- MENG1003 Engine Function and Design and P- MENG1009 Basic Electrical Principles and P- MENG1011 Health and Safety Fundamentals and C- BUS1004 Service and Information Techniques and C- MARE1000 Alternate Marine Propulsion Systems and C- MARE1001 Recreational Boat Principles and C- MARE1002 Stern Drive System Repair Principles and C- MARE1003 Outboard Motor Repair Principles and C- MENG1010 Diesel and Overhead Valve Engines

#### MATH1007 Mathematics Techniques 42.0 Hours

In this course, students consolidate and review the principles and techniques of mathematics required for the technical trades. Emphasis is placed on developing and promoting the use of mental arithmetic, estimation skills, problem solving, and reasoning skills.

#### MENG1000 Workshop Procedures 42.0 Hours

In this course, students are provided 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

In this course, students are provided with an understanding of common internal combustion engine fuels, fuel supply, and fuel management systems. Students also access and review relative engine fuel system manufacturer information technology.

#### MENG1002 Engine Electrical Systems Diagnostics 42.0 Hours

The nature of electricity and its function relating to common internal combustion engines are explored in this course. Students also begin to develop comprehension of electrical system diagnostics and testing procedures.

**MENG1003 Engine Function and Design 42.0 Hours**

An understanding of the design and function of common internal combustion engines and components relative to their operation are discussed and reviewed. Students also access and review relative engine manufacturer information technology.

**MENG1009 Basic Electrical Principles 42.0 Hours**

The basic concepts of electricity are explored in this course. The electrical circuit is the fundamental building block for these concepts. With knowledge of these electrical concepts and ohms law, the behavior of most electrical components will be understood.

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

The theory and operating principles of diesel and overhead valve engines are explored in this course. Students also develop the skills to diagnose, disassemble, analyze, and repair diesel and overhead valve engines and the components relative to their operation.

**MENG1011 Health and Safety Fundamentals 42.0 Hours**

Students explore basic fundamentals of safety in the workplace, sound environmental procedures in and around the workplace, and home safety. Students also identify personal health and safety concerns and problems in the environment.

**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.*