

# MARINE ENGINEERING MANAGEMENT

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## Program Outline

<b>Major:</b>	MEMG
<b>Length:</b>	1 Year
<b>Delivery:</b>	2 Semesters
<b>Credential:</b>	Ontario College Graduate Certificate
<b>Effective:</b>	2015-2016
<b>Location:</b>	Owen Sound
<b>Start:</b>	Winter (Owen Sound)

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### Description

Students are presented with material designed in co-operation with Transport Canada Marine Safety and Security (TCMSS), and Canada's shipping companies. Content material includes the academic portion of the TCMSS Engineering Officer Education Training (EOET) program for senior engineering officers. Students develop the knowledge, skills, and professionalism expected to function as part of an engineering team at the management level.

NOTE: This is a Transport Canada designated program.

### Career Opportunities

The graduate of this program may find a rewarding career as a ship's engineering officer managing commercial vessel operations throughout Canada and the world. This program may lead to career advancement to senior ranks on board ships and to positions of leadership in the marine industry.

### Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- use principles of leadership, team management and conflict resolution expectant of a marine engineering officer at the management levels;

- lead and manage effective operational teams whose goal is to transport cargo in a safe and environmentally sustainable manner;
- perform all work in accordance with legislation, regulation, policies and practices related to health and safety, accessibility, human rights and environmental management;
- evaluate the power plant performance and efficiencies through charting and trending and participate in the installation and maintenance of marine equipment and systems;
- operate and maintain equipment safely using handbooks, catalogues, manufacture's specifications, checklists, and legislative codes;
- interpret installation drawings, assembly drawings and detail drawings and compile technical specifications;
- integrate electro-technology, electronics and electrical equipment in the operation of alternators, generators, AC and DC motors;
- use senior engineering management principles during normal and abnormal operations of marine vessels;
- apply computer skills to conduct daily power plant operations at the management level.

### **The Program Progression:**

Winter Intake - Owen Sound

Semester 1 | Semester 2

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 Winter | Summer  
 2016 | 2016

### **Admission Requirements:**

Applicants must meet ONE of the following requirements to be eligible for admission to this program:

- Graduates of a Marine Engineering Cadet Training Program in Canada, (Georgian METC graduates meet this requirement), or
- holders of a Certificate of Competency as a Marine Engineer issued under the STCW Convention, or
- equivalent level of knowledge demonstrated through an interview and portfolio of experience

Note: applicants seeking transfer credit or advanced standing from other programs may be considered on an individual basis

**Additional Information:**

This program delivers the academic portion of the TCMSS Engineering Officer Education Training (EOET) Program for senior engineering officers. Further courses in engineering knowledge subjects and simulator training are also available at Georgian College.

Students interested in obtaining TCMSS engineering certificates must comply with legal requirements. These may include proof of Canadian Citizenship or proof of permanent resident status and a valid medical certificate and marine emergency training. Refer to Canada Shipping Act Marine Personnel Regulations for details.

**Graduation Requirements:**

10 Mandatory Courses

**Graduation Eligibility:**

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

**Mandatory Courses**

MEMG1000	Advanced Thermodynamics
MEMG1001	Advanced Applied Mechanics
MEMG1003	Automation and Control 1
MEMG1004	Automation and Control 2
MEMG1005	Ships' Business and Maritime Law
MEMG1006	Naval Architecture
MEMG1007	Electrical Machines Management
MEMG1010	Power Plant Auxiliaries Management
MEMG1011	Steam Plant Management
MEMG1012	Motor Plant Management

**Course Descriptions:**

MEMG1000 Advanced Thermodynamics 80.0 Hours

In this management level course, students are presented with material related to the thermodynamic analysis of internal combustion engines and other air breathing marine power devices, including gas turbines and air compressors. The course is based on the fundamental thermodynamic concepts and analysis techniques learned in the previous thermodynamics courses.

**MEMG1001 Advanced Applied Mechanics 64.0 Hours**

In this management level course the content material is designed to broaden the student's knowledge of general mechanics, fluid mechanics, hydromechanics, friction, balancing, vibration, stress and strain, bending, torsion, and stresses in shipboard structures.

**MEMG1003 Automation and Control 1 80.0 Hours**

Material presented in this course discusses electrical, electronic and control engineering at a senior engineering level. Material includes transistor theory, electronic control, surveillance and recording systems, power supplies, amplifiers and troubleshooting. This course also deals with safety systems, and reviews the fundamentals of process control, process measurement, governors, power sharing and hydraulic and pneumatic control circuits.

**MEMG1004 Automation and Control 2 64.0 Hours**

Practical application of automation and controls for safe operation of shipboard automated processes is the focus of this course. Material includes automated controls for auxiliary machinery such as purifiers, refrigeration, pumping systems, steering gears and mooring equipment, design features and system configuration of automated control equipment for main engines and boilers. Troubleshooting of electrical and electronic equipment, testing, and calibration and programmable logic controller basics are discussed.

**MEMG1005 Ships' Business and Maritime Law 48.0 Hours**

Management and control of compliance with legislative requirements, measures to ensure safety of life at sea and protection of the marine environment is the focus of this course. General subjects for study include, United Nations Conventions on the Law of Sea, International Maritime Organization and its conventions, International Labour Organization, World Health Organization and the Canada Shipping Act and its regulations.

**MEMG1006 Naval Architecture 128.0 Hours**

Naval architecture and ship construction, including damage control at a management level is presented in this course, with a strong emphasis on theoretical and practical knowledge related to proper decision making in the event that the ship's hull is compromised. Relationship between speed and power/fueling requirements of a ship's hull is discussed as well.

#### MEMG1007 Electrical Machines Management 144.0 Hours

Electrical, electronic and control engineering at a senior engineering level are presented in this course. Topics include electronics, power electronics, electrical theory, DC machines, AC machines, and their practical application on board a vessel. There is discussion of high voltage installations, distributions and control. Troubleshooting of electrical equipment is stressed during the course.

#### MEMG1010 Power Plant Auxiliaries Management 144.0 Hours

Safe working practices and maintenance management concepts for auxiliaries are discussed in this course. Material includes efficient operation, surveillance, performance, assessment and maintaining safety of auxiliaries in a power plant, detection and identification of machinery faults and inspection and adjustment of equipment as per class and statutory requirements.

#### MEMG1011 Steam Plant Management 96.0 Hours

Safe working practices and steam plant management concepts are presented in this course. Material includes efficient operation, surveillance, performance, assessment and maintaining safety of power plant, detection and identification of machinery faults and inspection and adjustment of equipment as per class and statutory requirements.

#### MEMG1012 Motor Plant Management 128.0 Hours

Safe working practices and motor plant management concepts are presented in this course. Material includes efficient operation, performance assessment; detection and identification of machinery faults; inspection and adjustment of equipment as per Class and statutory requirements. Management of safe working practices with respect to the Canada Shipping act's Marine Occupational Health and Safety and the Canada labour Code requirements are also considered.

#### **Course Description Legend**

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

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