MARINE ENGINEERING TECHNOLOGY

Program: MTCY
Credential: Ontario College Advanced Diploma, Co-op
Delivery: Full-time
Work Integrated Learning: 2 Co-op Work Terms
Length: 6 Semesters, plus 2 work terms
Duration: 3 Years
Effective: Fall 2023
Location: Owen Sound

Description

Students are immersed in an internationally recognized co-operative marine engineering cadet program designed in co-operation with Transport Canada Marine Safety and Security (TCMSS) and Canada's shipping companies. Students focus on developing competencies required to function as part of a shipboard marine engineering team. Content includes, and is based upon, the TCMSS Engineering Officer Education Training (EOET) program requirements.

The final two semesters are open to anyone holding an STCW Reg. III/1 Marine Engineer Certificate of Competency. These students can apply for advanced standing exempting them from the first two years of the program. Upon completion of semesters five and six, they may be exempted from written examinations for 2nd and Chief Engineer Officer.

NOTE: This is a TCMSS approved program.

Career Opportunities

Graduates are educated and trained to become marine engineer officers of the watch. They may find a rewarding career as a ship's engineering officer on board commercial vessels such as bulk carriers, tugs, ferries, tankers, cruise ships, coast guard and fishing vessels throughout Canada and the world. This program may also lead to positions of leadership in the marine industry. Graduates may earn academic exemptions and credentials to advance to Chief Engineer pending further shipboard experience and higher level short training courses.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. use principles of leadership, team management and conflict resolution expectant of a marine engineering officer at the operational and management levels;
2. lead and manage effective operational teams whose goal is to transport cargo in a safe and environmentally sustainable manner;
3. perform all work in accordance with legislation, regulation, policies and practices related to health and safety, accessibility, human rights and environmental management;
4. evaluate the power plant performance and efficiencies through charting and trending and participate in the installation and maintenance of marine equipment and systems;
5. operate and maintain equipment safely using handbooks, catalogues, manufacture's specifications, checklists, and legislative codes;
6. interpret installation drawings, assembly drawings and detail drawings and compile technical specifications;
7. integrate electro-technology, electronics and electrical equipment in the operation of alternators, generators, AC and DC motors;
8. use senior engineering management principles during normal and abnormal operations of marine vessels;
9. apply computer skills to conduct daily power plant operations at the operational and management level;
10. analyze basic entrepreneurial strategies used to identify and respond to new opportunities.

Practical Experience

All co-operative education programs at Georgian contain mandatory work term experiences aligned with program learning outcomes. Co-op work terms are designed to integrate academic learning with work experience, supporting the development of industry specific competencies and employability skills.

Georgian College holds membership with, and endeavours to follow, the co-operative education guidelines set out by the Co-operative Education and Work Integrated Learning Canada (CEWIL) and Experiential and Work-Integrated Ontario (EWO) as supported by the Ministry of Colleges and Universities.

Co-op is facilitated as a supported, competitive job search process. Students are required to complete a Co-op and Career Preparation course scheduled prior to their first co-op work term. Students engage in an active co-op job search that includes applying to positions posted by Co-op Consultants, and personal networking. Co-op work terms are scheduled according to a formal sequence that alternates academic and co-op semesters as shown in the program progression below.

Programs may have additional requirements such as a valid driver's license, strong communication skills, industry specific certifications, and ability to travel. Under exceptional circumstances, a student may be unable to complete the program progression as shown below. Please refer to Georgian College Academic Regulations for details.

International co-op work terms are supported and encouraged, when aligned with program requirements.

Further information on co-op services can be found at www.GeorgianCollege.ca/co-op (https://www.georgiancollege.ca/co-op/)

External Recognition

This program is accredited by Cooperative Education and Work Integrated Learning Canada.

Program Progression

The following reflects the planned progression for full-time offerings of the program.

Fall Intake

- **Sem 1:** Fall 2023
- **Sem 2:** Winter 2024
- **Sem 3:** Summer 2024
- **Work Term 1:** Fall 2024
- **Sem 4:** Winter 2025

- **Work Term 2:** Summer 2025
- **Sem 5:** Winter 2026
- **Sem 6:** Summer 2026

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 https://www.georgiancollege.ca/admissions/credit-transfer/ (http://www.georgiancollege.ca/admissions/credit-transfer/)

Admission Requirements

OSSD or equivalent with

- Grade 12 English (C or U)
- Any* Grade 12 Mathematics (C, M, or U)

*A minimum grade of 70% in Grade 12 MAP4C, Foundations for College Mathematics, is required.

Note: Applicants must provide a valid Transport Canada Marine Medical stating "fit for sea service" or "fit for sea service with limitations" prior to program start. In the case of an applicant with a certificate "fit for sea service with limitations", the application will be reviewed. Failure to provide the certificate by the deadline may result in an offer of admission being revoked and withdrawal from courses.

For advanced standing entry into the 3rd year (Semester 5 and 6) of the program, the following additional requirements apply:

- Graduates of a Marine Engineering Cadet Training Program in Canada, (Georgian MTCY or 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

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/academic-regulations/ (https://www.georgiancollege.ca/admissions/academic-regulations/)

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 for Prior Learning website for details: www.georgiancollege.ca/admissions/credit-transfer/ (https://www.georgiancollege.ca/admissions/credit-transfer/)

Additional Information

This is a fully integrated co-operative education program, wherein the cadet will participate in semesters of academic study at the Owen Sound Campus, interspersed with coop work terms onboard ships. Hence, undergraduates are involved in work activities directly related to their educational objectives.

Every effort is made to arrange work terms, however, cadets must qualify for such and no guarantee of placement can be made.

Canadian flagged ships only accept Canadian Citizens or Permanent Residents for employment. International students are encouraged to investigate Co-op opportunities prior to commencing studies. Cadets may be subjected to adverse environmental conditions while on board ship (noise, dirt, dust, confined quarters and heavy lifting). Anyone with known allergies should consult with the Co-op department.

International applicants must sign a letter to acknowledge that Transport Canada does not issue Marine Certificates of Competency (Marine Licence) to non-Canadians.

Eligibility to enter the U.S.

Although not a Georgian College admission requirement, all shipping companies, whether Canadian or foreign, which have vessels trading in U.S. ports, require that all their shipboard personnel be eligible to legally enter the U.S.

TCMSS Certification

Students interested in obtaining the TCMSS engineering certificates must comply with their legal requirements as described in the Canada Shipping Act Marine Personnel Regulations. These include proof of Canadian citizenship or proof of permanent resident status and a valid marine medical certificate.

Marine Emergency Duties, Propulsion Plant Simulator, and Maritime Security courses are also requirements for certification by TCMSS. These courses are provided at Georgian College at an extra fee.

Graduation Requirements

40 Program Courses
2 Communications Courses
2 Co-op Work Terms

Graduation Eligibility

To graduate from this program, the passing weighted average for promotion through each semester, from year to year, 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.

Program Tracking

The following reflects the planned course sequence for full-time offerings of the Fall intake of the program. Where more than one intake is offered contact the program co-ordinator for the program tracking.

Semester 1		Hours
Program Courses		
CHEM 1006	Fuel Combustion Chemistry	32
ENGN 1001	Basic Engineering Science	64
MARE 1040	Marine Engine Plants	64
MARE 1043	Marine Systems and Components Blueprint	32
MARE 1044	Marine Plant Energy Distribution	112
MARE 1050	Marine Auxiliary Systems	80
MATH 1039	Introduction to Marine Engineering Technology Mathematics	48
Communications Course		

Select 1 course from the communications list during registration.		42
	Hours	**474**
Semester 2		
Program Courses		
CHEM 1007	Industrial Chemistry	32
ELEC 1008	Basic Electrical Engineering	64
ENGN 1002	Basic Control Engineering	96
MATH 1040	Marine Engineering Technology Mathematics	48
MARE 1052	Marine Auxiliary Steam Plants	96
MARE 1053	Hydraulics and Pneumatics	48
MCHN 2000	Machining	48
MENG 1018	Basic Applied Mechanics	64
	Hours	**496**
Semester 3		
Program Courses		
MARE 1046	Ship Construction for Engineers	48
MARE 2032	Advanced Marine Power Plants	144
MARE 2034	Shipboard Materials	64
MARE 2035	Marine Power Plant Watchkeeping	32
WETC 2000	Welding	64
Communications Course		
Select 1 course from the communications list during registration.		42
	Hours	**394**
Semester 4		
Program Courses		
ELEC 2019	Thermodynamics	64
ELEC 2020	Advanced Electrical Engineering	96
MARE 2019	Computer Applications and Networks	48
HRAC 2004	Heating, Refrigeration and Ventilation, and Air Conditioning	64
MARE 2038	Stability	48
MARE 3020	Ships Master's Business for Engineers	64
MARE 3055	Leadership and Teamwork	24
	Hours	**408**
Semester 5		
Program Courses		
MARE 3040	Electrical Machines Management 1	80
MARE 3041	Advanced Applied Mechanics	64
MARE 3042	Power Plant Auxiliaries Management	144
MARE 3043	Automation and Controls 1	80
MARE 3048	Naval Architecture	128
	Hours	**496**
Semester 6		
Program Courses		
MARE 3045	Electrical Machines Management 2	64
MARE 3046	Advanced Thermodynamics	80
MARE 3047	Automation and Controls 2	64
MARE 3049	Motor Plant Management	128
MARE 3050	Ship's Business and Maritime Law	48
	Hours	**384**
	Total Hours	**2652**

Co-op Work Term 1		**Hours**
COOP 1032	Marine Engineering Work Term 1 (occurs after Semester 3)	840
	Hours	**840**
Co-op Work Term 2		
COOP 2030	Marine Engineering Work Term 2 (occurs after Semester 4)	840
Courses occur in-person prior to work term		
ELEC 2021	Shipboard Electrical Knowledge and Skills	96
MARE 2036	Shipboard Power Plant Studies	64
MARE 2037	Shipboard Control Strategies	48
	Hours	**1048**
	Total Hours	**1888**

Graduation Window

Students unable to adhere to the program duration of three years (as stated above) may take a maximum of six years to complete their credential. After this time, students must be re-admitted into the program, and follow the curriculum in place at the time of re-admission.

Disclaimer: *The information in this document 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.*

Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.