Fisheries and Marine Institute of Memorial University of Newfoundland

GRADUATE PROGRAMS IN
APPLIED OCEAN TECHNOLOGY
(OCEAN MAPPING)
As part of Memorial University, the Marine Institute provides you with credentials that are recognized around the world. The Marine Institute, the largest oceans institute of its kind in Canada, offers a suite of graduate programs unlike that found anywhere else in the country.

The new Master of Applied Ocean Technology (Ocean Mapping) and the Graduate Diploma focus on the development of technological literacy and competency to be an effective ocean mapper through advanced and applied technical training and applied research. The programs’ core courses are designed to develop a thorough understanding of core values and competencies as well as proficiencies in hydrographic best practices, geospatial data analysis, image interpretation, and application development.

| Master of Applied Ocean Technology (Ocean Mapping) | Acquire, analyze, manage and communicate ocean data to develop real-world solutions for the sustainable management of our ocean resources | 4 |
| Graduate Diploma in Applied Ocean Technology (Ocean Mapping) | Develop the theoretical knowledge and highly-technical skills to enter the multi-disciplinary field of ocean mapping | 5 |
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**PROGRAM DESCRIPTION**
The degree of Master of Applied Ocean Technology (Ocean Mapping) focuses on refining an ocean mapper’s technological competency to manage ocean data and develop real-world solutions for the sustainability of our oceans.

**PROGRAM OBJECTIVE**
The Master of Applied Ocean Technology (Ocean Mapping) will provide students with an advanced level of technological literacy, theory and competency to conduct data collection and ocean mapping. Practitioners will be able to communicate their work to a variety of stakeholder groups and provide credible contributions to the global demand to support ocean management and sustainability.

Graduates of this program will be able to:
- Lead technical field operations
- Collect, manage and analyze spatial and aspatial data
- Display and interpret qualitative and quantitative information
- Demonstrate adherence to the principles of scientific, technical and professional writing
- Through projects, reports and presentations, effectively communicate and document their fieldwork
- Relate their ocean mapping work and expertise to the broader field of applied ocean technology at the local, national and international levels

**PROGRAM REQUIREMENTS**
Students are required to complete 30 credit hours of course work either through the project option or the course option.

**Project Option**
- Eight (8) core courses (24 credit hours)
  - Seven in-class courses
  - One field course
- Project course (6 credit hours)

**Course Option**
- Eight (8) core courses (24 credit hours)
  - Seven in-class courses
  - One field course
- Two (2) elective courses (6 credit hours)

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**PROGRAM DESCRIPTION**
The Graduate Diploma in Applied Ocean Technology (Ocean Mapping) provides opportunities for students who want to enter the ocean mapping field by developing highly technical capabilities that will empower them to conduct industry-ready tasks and applied research in any aspect of ocean mapping.

**PROGRAM OBJECTIVE**
Graduates of this program will be able to:
- Lead technical field operations
- Collect, manage, and analyze spatial and aspatial data
- Display and interpret qualitative and quantitative information
- Demonstrate adherence to the principles of scientific, technical and professional writing
- Through projects, reports and presentations, effectively communicate and document their fieldwork
- Relate their ocean mapping work and expertise to the broader field of applied ocean technology at the local, national and international levels

**PROGRAM REQUIREMENTS**
Students are required to complete 15 credit hours of core course work.

**CORE COURSES**
- **OTEC 6000** Ocean Mapping Essentials I
- **OTEC 6001** Ocean Mapping Essentials II
- **OTEC 6002** Applied Geodesy and Positioning
- **OTEC 6003** Applied Hydrography
- **OTEC 6004** Field Course in Ocean Mapping
**COURSE SELECTION & PROGRAM FOCUS**

**PROGRAM FOCUS**

The program focuses on the development of the required level of technological literacy and competency to be an effective ocean mapper through advanced and applied technical training and applied research. Core courses are designed to develop a thorough understanding of core values and proficiencies in hydrographic best practices, geospatial data analysis, image interpretation and application development. A field immersion component provides opportunities for the practical application of the “plan-to-chart” solution through real-world, industrial situations.

The master’s program is for students looking to attain a balance of theoretical and applied technical knowledge and skills, appropriate for research and work in the ocean technology sector.

Graduate program courses will cover the eclectic fundamentals of ocean mapping as well as the technical and industrial nature of hydrographic and terrestrial surveying practices. The field course will integrate overall skill sets attained within a field immersive, project-driven and industry-relevant course work.

**ADMISSION REQUIREMENTS**

NOTE: The following requirements apply for both the master’s and graduate diploma.

Admission to the program is on a limited and competitive basis.

1. To be considered for admission to the program, an applicant will normally possess a relevant second class or better undergraduate degree in the areas of science, technology, engineering or equivalent, both in achievement and depth of study, from an institution recognized by the Senate.

2. Any other applicant may be considered for admission provided that:
   a. The applicant has completed a second-class or equivalent undergraduate degree from an institution recognized by the Senate;
   b. The applicant demonstrates a statement of satisfactory level of knowledge of math and science through undergraduate or graduate course work;
   c. The applicant demonstrates in a statement of interest, a commitment and passion for ocean mapping and related technology through combined efforts of prior technical training in a relevant ocean technology field and employment or experience in field schools, research programs, the ocean technology industry, regulatory agencies or government departments, non-governmental organizations, consulting activities, or other relevant activities.

Completion of additional course work in math, science, and/or related technology may be required for applicants applying under the clause.

3. Applicants who did not complete a baccalaureate or post-graduate degree at a recognized university where English is the primary language of instruction must normally complete either the:
   a. Test of English as a Foreign Language (TOEFL) and achieve a paper-based score of 580 (or higher), computer-based score of 237 (or higher), or internet-based score of 92-93 (or higher); or
   b. International English Language Testing System (IELTS) and achieve a score of 7 (or higher).

Information regarding the TOEFL is available from the Educational Testing Services at [www.ets.org](http://www.ets.org). IELTS information is available at [www.ielts.org](http://www.ielts.org). Please note that other equivalent tests acceptable to Memorial University’s School of Graduate Studies will also be considered.

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**COURSE SELECTION CHART**

<table>
<thead>
<tr>
<th>CORE COURSES</th>
<th>MASTER’S PROJECT OPTION (6 COURSES + PROJECT)</th>
<th>MASTER’S COURSE OPTION (10 COURSES)</th>
<th>GRADUATE DIPLOMA OPTION (5 COURSES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTEC 6000 - Ocean Mapping Essentials I</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OTEC 6001 - Ocean Mapping Essentials II</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OTEC 6002 - Applied Geodesy and Positioning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OTEC 6003 - Applied Hydrography</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>OTEC 6004* - Field Course in Ocean Mapping</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>OTEC 6005 - Applied Underwater Acoustics</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OTEC 6008 - Applied Geostatistical Analysis and Seabed Characterization</td>
<td>✓</td>
<td>✓</td>
<td>NOT APPLICABLE</td>
</tr>
<tr>
<td>OTEC 6010 - Marine Geology and Geophysics</td>
<td>✓</td>
<td>✓</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTIVES</th>
<th>COMPLETE 8</th>
<th>CHOOSE 2</th>
<th>COMPLETE 5</th>
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<tbody>
<tr>
<td>OTEC 6007 - Autonomous Vehicles for Ocean Mapping</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>OTEC 6013 - MetOcean Instrumentation and Observation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>OTEC 6014 - Introduction to Marine Renewable Energy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>OCEG 621 - Advanced Hydrography</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>MSTM 6011 - Introduction to Integrated Coastal and Ocean Management / Marine Spatial Planning</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>MSTM 6015 - Marine Protected Areas</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>MSTM 6027 - Coastal and Ocean Environment Policies</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>MSTM 6039 - Sustainability and Environmental Responsibility</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>OCSC 7100 - Biological Oceanography</td>
<td>✓</td>
<td>✓</td>
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</tbody>
</table>

**PROJECT OPTION**

| OTEC 6100 - Applied Ocean Technology Project in Ocean Mapping (6 credit hours) | ✓ | NOT APPLICABLE |

*Prerequisite courses OTEC 6000, 6001, 6002, 6003 must be completed prior to OTEC 6004.

This chart is for reference only.

Follow the University Calendar for course descriptions and regulations for your program.

The information provided here is subject to change.

The University Calendar is the final authority on university and program regulations.
GRADUATE RESOURCES

School of Graduate Studies
In addition to the many on-campus supports for graduate students, the Marine Institute works closely with Memorial University’s School of Graduate Studies (SGS), which is the central academic support unit for approximately 3,800 graduate students enrolled in over 100 graduate diploma, master’s, and doctoral degree programs. SGS aspires to provide best-in-Canada supports for graduate students at all stages of their programs, from admissions and orientation to progress and completion, and beyond. Through its network of academic and service unit partners, SGS is also responsible for graduate enrolment management, graduate student services and skills training, internationalization, faculty supervisor training and supports, administration of graduate student funding and awards, timely completion of graduate programs, and preparation for life and success after graduate school.

Office of Research and Development
A variety of resources are available through the Marine Institute’s Office of Research and Development to support graduate student research, including proposal development, identifying funding opportunities and completing ethics applications to help you get your research career off to the right start.

Research Supervisors
Graduate students in research-intensive programs (i.e., one that requires a thesis) will often need a research supervisor. We strongly encourage you check with your graduate program of interest to see if a supervisor is needed, and to find a supervisor at the time of application if necessary. This will increase your chances at admission and allow for a better and more productive graduate student experience. There are a few ways you can find a supervisor:

- Consult www.mi.mun.ca/researchsupervisors/ for the current list of eligible supervisors, and their research areas of interest.
- Do a search using www.yaffle.ca using the key words that best describe your research interests. The search results should yield several names of faculty members in your area of interest along with their contact information.
- Contact our Graduate Recruitment Officer for suggestions on research supervisors who might be looking for students.

When contacting potential supervisors, it is important to make a good first impression. We suggest you take the following steps:
- Review the researcher’s information online and become familiar with his/her research.
- Write a concise email to the faculty member you would like to work with. Introduce yourself, your academic credentials (GPA, academic awards, research experience, etc.), and the kind of research you would like to pursue and the reason for it.
- Advise them you have applied for a graduate program at Memorial University, note the intended start date, and ask if they might be interested in serving as your supervisor for a program.

Tuition and Fees
Graduate tuition fees at Memorial University are charged on a semester-by-semester basis and reflect the cost of the graduate program not the number of required courses. Memorial has three semesters per academic year: Fall (September - December), Winter (January - April), and Spring (May - August). Program fees are to be paid each semester. For information about tuition and fees, please refer to www.mun.ca/become/graduate.

Graduate Funding
Memorial University offers competitive funding packages to both Canadian and International academically eligible full-time graduate students in research-intensive programs (i.e. one that requires a thesis). Student funding can come from multiple sources in the form of supervisor research grants, internal and external scholarships School of Graduate Studies fellowships, and assistantships. For information about funding opportunities, please refer to www.mun.ca/become/graduate.

Online Courses
Online course delivery is fully supported by Memorial University’s Centre for Innovation in Teaching and Learning (CITL). Brightspace is the virtual learning platform used as the main content delivery method and provides a virtual classroom for each course in a program.

Students can avail of all the services and support offered by the Marine Institute and Memorial University including access to the extensive University Library System resources and to Help Desk support available through CITL for technical issues related to Brightspace.

Internships
Internships may be a part of any student’s research program, provided the supervisor and supervisory committee are supportive. The Marine Institute’s Office of Career Integrated Learning is a resource that could be available to students or they can seek internships themselves with the support of their mentorship team.
1. Get to Know our Programs and Requirements
   Visit us online www.mun.ca/become/graduate for complete details and more resources to help successfully apply for our programs.

2. Connect
   Speak with our graduate recruitment officer to discuss your application or find a researcher supervisor.

3. Apply Online
   Choose when you would like to start your studies and check the deadlines to apply. Identify and collect all required application materials. Submit your application online to Memorial University’s School of Graduate Studies at www.mun.ca/become/graduate/apply

CONNECT WITH THE FISHERIES AND MARINE INSTITUTE

GRADUATE STUDENT RECRUITMENT OFFICER
Student Affairs
Fisheries and Marine Institute of
Memorial University of Newfoundland
Telephone: 709.778.0395
Toll-free: 1.800.563.5799, ext. 0395
recruitment@mi.mun.ca
www.mi.mun.ca
www.mun.ca/become/graduate

Follow, watch, connect and like us:
Instagram  YouTube  LinkedIn  Twitter  Facebook

THIS BROCHURE IS FOR REFERENCE ONLY.
FOLLOW THE UNIVERSITY CALENDAR REGULATIONS FOR YOUR PROGRAM.
The information provided here is subject to change. The university calendar is the final authority on university and program regulations.
www.mun.ca/regoff/calendar