TECHNOLOGY MANAGEMENT
(ENGINEERING & APPLIED SCIENCE)

MASTER’S DEGREE (ONLINE)
Understand and manage processes in technology-based organizations.

MARINE INSTITUTE

MEMORIAL UNIVERSITY
PROGRAM DESCRIPTION

The Master of Technology Management (Engineering and Applied Science Technology) is an innovative program, the first of its kind in Canada. This online program provides professional development opportunities for busy, working professionals engaged in a variety of engineering technology and applied science disciplines.

The program provides the knowledge and skills necessary to effectively manage complex technical operations, deal with the challenges and dynamics of innovation-driven industries, and strategically consider issues encompassing the management of engineering technology.

This program is offered fully online, and applicants from the global community are invited to apply.

For more information and to apply, visit www.mi.mun.ca/mtm.

PROGRAM OBJECTIVE

The Master of Technology Management program will provide graduates with strategic planning and decision making skills in the context of engineering and applied science technology-based organizations. Graduates will gain insight into the nature, structure and operation of technical operations, and the factors that influence their success.

The Program enhances career development opportunities for entry-level managers or those looking to become managerial professionals in the field of engineering and applied science technology.
PROGRAM STRUCTURE

Participants will complete course work offered by the Fisheries and Marine Institute, Memorial University.

OPTION 1
- Two core courses (6 credit hours)
- Six elective courses (18 credit hours)
- Project in Engineering Technology Management (6 credit hours)

OPTION 2
- Two core courses (6 credit hours)
- Eight elective courses (24 credit hours)

CORE COURSES

| MSTM 6031 | Overview of Technical Operations |
| MSTM 6032 | Managing Technological Innovation |

ELECTIVES

| MSTM 6022 | Communication and Conflict Resolution in the Technical Environment |
| MSTM 6023 | Strategic Planning, Policy Participation and Management of Engineering Technical Operations |
| MSTM 6030 | Principles of Management for Engineering Technology Enterprises |
| MSTM 6033 | Quality Systems |
| MSTM 6034 | Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments |
| MSTM 6035 | Information Technology Applications in the Health And Engineering Technology Environment |

PROJECT OPTION

| MSTM 6100 | Project in Engineering and Applied Science Technology Management (6 credit hours) |

ADMISSION

REQUIREMENTS

Admission to the Program is on a competitive basis. Applicants must meet Memorial University School of Graduate Studies’ admission requirements.

In addition, to be considered for admission to the Engineering and Applied Science Option an applicant will normally possess a second class or better undergraduate degree from a university of recognized standing and will normally have:

- A Memorial University Bachelor of Technology, Bachelor of Maritime Studies, or a comparable undergraduate degree with appropriate technology sector and business management course work; and
- A minimum of two (2) years’ relevant employment experience.

HOW TO APPLY

Applicants should submit their application to Memorial University’s School of Graduate Studies by the following deadlines:

- **FALL ADMISSION — MAY 15**
- **WINTER ADMISSION — SEPTEMBER 15**

For more information and to apply online, go to [www.mun.ca/become/graduate/apply](http://www.mun.ca/become/graduate/apply).
COURSE DESCRIPTIONS

MSTM 6022 - COMMUNICATION AND CONFLICT RESOLUTION IN A TECHNICAL ENVIRONMENT
This course provides participants with an understanding of the basic principles of conflict resolution, negotiation, and effective communication and interpersonal skills. The course will enable students to diagnose, understand and accept a role in the negotiation and management of conflicts between individuals and groups in an organizational context, and to investigate and solve problems and manage conflicts within the workplace.

MSTM 6023 - STRATEGIC PLANNING, POLICY, PARTICIPATION AND MANAGEMENT IN TECHNICAL OPERATIONS
This course is designed to give participants an understanding of the strategic planning and policy development needs and functions of an organization. The course will examine current concepts, approaches and, specifically, the critical role of managers and leaders in the areas of planning, policy development, problem solving and decision making. Strategic planning and policy development in the business must be led by managers who provide overall vision, coordination, decisions on allocation of resources, communication and ongoing commitment, evaluation and support.

MSTM 6030 - PRINCIPLES OF MANAGEMENT FOR ENGINEERING TECHNOLOGY ENTERPRISES
This course introduces students to core competencies for the effective management of a technology-based enterprise. Students will explore the essentials of human resource management, performance management, financial operations, marketing and workplace ethics for engineering technology and maritime-based enterprises.

MSTM 6031 - OVERVIEW OF TECHNICAL OPERATIONS
This course provides students with a management approach to the fundamental aspects of production and/or service delivery systems of organizations in concert with marketing, human resources, finance, and information systems. Students will review management decision making processes including day-to-day operating decisions such as inventory and quality control to long-term strategic decisions such as capacity and location planning.

MSTM 6032 - MANAGING TECHNOLOGICAL INNOVATION
This course provides students with an understanding of managerial practices and tools associated with technological innovation. The course focuses on process and implementation for both incremental and radical innovation and addresses strategic, organizational and managerial issues associated with new, established, small or large organizations.

MSTM 6033 - QUALITY SYSTEMS
The course provides students with an understanding of several key concepts related to quality management, including TQM (total quality management), ISO 9000: the role of management, customer focus (internal and external); employee empowerment; and benchmarking. Continual improvement techniques and strategies including SPC (statistical process control), six sigma, Kaizen approach and CEDM system will be explored. The contributions of various quality pioneers including Deming, Juran and Crosby will be discussed.

MSTM 6034 - PROJECT MANAGEMENT IN THE OFFSHORE, HEALTH, FISHERIES AND ENGINEERING TECHNOLOGY ENVIRONMENTS
This course will include an overview of project management. It will include presentations, discussions, and case-based analysis around project planning and monitoring, resource planning, budgeting and cost controls, assessing and managing risks; managing team work; effective communications; quality control; and negotiations and contracts.

MSTM 6035 - INFORMATION TECHNOLOGY APPLICATIONS IN THE HEALTH AND ENGINEERING TECHNOLOGY ENVIRONMENTS
This course introduces the importance of information technology in the successful operation of technology organizations. Students will be presented with managerial, informational and technological issues related to the management of IT, and with a framework to better manage IT. Students will discuss the strategic applications of information technology.

MSTM 6036 - SUPPLY CHAIN MANAGEMENT AND ADVANCED ENGINEERING TECHNOLOGY OPERATIONS
This course provides a comprehensive understanding of supply chain management including planning, management and measurement of customer demand, sourcing, operations and manufacturing, inventory, warehousing, transportation, and the effective application of technology to optimize supply chain performance. In addition, this course includes advanced technical operations topics including global sourcing and logistics, forecasting, lean systems, and resource, sales and operations planning.

MSTM 6037 - RISK ANALYSIS AND OPERATIONS IN THE ENGINEERING TECHNOLOGY SECTOR
This course focuses on enterprise risk management methodologies and their application, including alignment with strategic objectives; risk identification and analysis; risk management tools; risk mitigation; and strategic emergency planning.

MSTM 6038 - MANUFACTURING AND ENGINEERING TECHNOLOGY MANAGEMENT
This course covers the organizational, strategic, and operational aspects of manufacturing. Production planning processes, resource allocation issues as well as analysis and operation of inventory systems will be discussed. Students will review design, management and improvement processes and exam available systems used to coordinate these processes, including the MRP (material requirements planning), JIT/Lean (just-in-time), and DBR (Drum-Buffer-Rope), also known as constraint-based planning.

MSTM 6039 - SUSTAINABILITY AND ENVIRONMENTAL RESPONSIBILITY
This course focuses on tools that can be applied within organizational strategies for sustainability and social responsibility. Students will examine case studies and identify opportunities for improvement through the use of environmental auditing, performance reporting, selection of indicators, environmental risk assessment, modeling and environmental accounting. The course will also address global issues such as climate change and carbon trading.

MSTM 6052 - MANAGEMENT OF INTELLECTUAL PROPERTY
Intellectual Property (IP), as a strategic corporate asset has become a key factor in modern knowledge-based organizations. This course will consider the Intellectual Property tools necessary to effectively protect IP. Furthermore, this course will discuss the best strategies and approaches for value creation through the use of Intellectual Property Rights.

MSTM 6054 - TECHNOLOGY ASSESSMENT
This course introduces students to the methods and tools applied in technology assessment. Technology assessment is of growing importance to technology management and research. In this course, students will review the common technology assessment approaches used for government and non-government uses; including risk assessment, decision analysis, impact analysis, cost-benefit analysis, roadmapping and system dynamics.

MSTM 6056 - MANAGEMENT FOR INTERNATIONAL DEVELOPMENT
This course will involve the students in discussions and case studies related to international development activities that aim to improve the livelihoods of the poor and/or under-represented in developing countries. It will consider types of funding agencies, proposal development, needs assessments, project management strategies, sustainable resource management, human resource development, consideration of the impacts on the host or target group as well as their developing country, change management strategies, communication strategies and other relevant topics.

Project Option
MSTM 6100 - PROJECT IN ENGINEERING AND APPLIED SCIENCE TECHNOLOGY MANAGEMENT (6 CREDIT HOURS)
Students will choose a topic in consultation with the Program Chair and Project Supervisor. Students will work independently to carry out an in-depth study of a problem or application within the area of technology management and fully document and present their findings. Preferably the problem will be directly related to a workplace situation. The resulting capstone paper will be evaluated by two examiners.
# COURSE SELECTION CHART

<table>
<thead>
<tr>
<th>CORE COURSES</th>
<th>PROJECT OPTION</th>
<th>COURSE ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSTM 6031</td>
<td>COMPLETE 2</td>
<td>COMPLETE 2</td>
</tr>
<tr>
<td>MSTM 6032</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTIVE COURSES</th>
<th>PROJECT OPTION</th>
<th>COURSE ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSTM 6022</td>
<td>CHOOSE 6</td>
<td>CHOOSE 8</td>
</tr>
<tr>
<td>MSTM 6023</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6030</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6033</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6034</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6035</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6036</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6037</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6038</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6039</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6040</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6041</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6042</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MSTM 6043</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

## PROGRAM DELIVERY AND SUPPORT

The overall structure of the program is course-based with courses offered online by the Fisheries and Marine Institute of Memorial University. This is fully supported by Centre for Innovation in Teaching and Learning (CITL). Brightspace is used as the main content delivery method and provides a virtual classroom for each course in the 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.

## ABOUT THE MARINE INSTITUTE

As a campus of Memorial University of Newfoundland, the Fisheries and Marine Institute is Canada’s most comprehensive centre for education, training, applied research and industrial support for the ocean industries.

Located on the edge of the Atlantic Ocean, we are one of the most respected centres of marine learning and applied research in the world.

The Marine Institute provides more than 20 industry-driven programs ranging from technical certificates to master’s degrees. In addition to undergraduate and graduate degrees, the Institute offers advanced diplomas, diplomas of technology and technical certificates.

Students enjoy a learning environment where small class sizes are the rule, hands on instruction is a way of life and competitive tuition rates put an internationally-recognized education well within reach.

The Institute also runs a variety of short courses and industrial response programs. All programs and courses are designed to provide students with knowledge and skills required for success in the workforce.

The Institute has three Schools — the School of Fisheries, the School of Maritime Studies and the School of Ocean Technology — and within these Schools a number of specialized centres and units.

These centres and units lead the Institute, both nationally and internationally, in applied research and technology transfer and in the provision of training to a variety of industry clients.
CONTACT INFORMATION

GRADUATE STUDENT RECRUITMENT OFFICER
Division of Academic and 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/mtm
www.mun.ca/become/graduate

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