BACHELOR DEGREE
Prepare for a career as a technology leader.

TECHNOLOGY
(HEALTH SCIENCES OR ENGINEERING AND APPLIED SCIENCE OPTIONS)

MARINE INSTITUTE
MEMORIAL UNIVERSITY
PROGRAM DESCRIPTION

The Bachelor of Technology program prepares graduates for career advancement in health science technology or engineering/applied science technology industries. It is designed for students who have graduated from an accredited diploma of technology program that is applicable to one of the two optional areas. Courses in the program provide the student with an introduction to human resource and business management concepts, and the social contexts in which their careers will be based.

After the program is complete, your combined diploma and degree will provide you with strong technical training that meets national accreditation standards.

This program is offered both on campus and online, and can be studied on a full time or part time basis.

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

PROGRAM OBJECTIVE

In this program, you will develop the skills needed for leadership positions in a variety of global sectors.

PROGRAM STRUCTURE

This one-year program consists of 39 credit hours consisting of 13 courses. The program is available on a full or part-time basis, and is available both on-campus and through internet-based delivery. Full-time students can complete the program in one academic year.
BACHELOR OF TECHNOLOGY - ENGINEERING AND APPLIED SCIENCE TECHNOLOGY OPTION

- Students must take 39 credit hours with 18 credit hours from the required courses and 21 credit hours from the electives.
- At least one elective must be chosen from each of the groups A and B.

**Required Courses**

- 3 credit hours in English at the 1000 level
- MSTM 4010 - Assessment and Implementation of Technology
- MSTM 4019 - Research Methods
- MSTM 4020 - Economic Management for Technologists
- MSTM 4025 or STATISTICS 1510 or 2500 or Equivalent - Applied Statistics
- MSTM 4040 - Project Management for Technologists
- MSTM 4060 - Advanced Technical Communications
- MSTM 4400 - Technological Assessment Project

**Group A Electives (Minimum of One)**

- BUSINESS 1101 or 2102 - Principles of Accounting or Introductory Accounting for Non-Business Students
- BUSINESS 4000 - Business Law I
- ECONOMICS 3360 - Labour Market Economics
- MSTM 4008 - Introduction to Offshore Oil and Gas
- MSTM 4011 - Introduction to Intellectual Property and its Management
- MSTM 4012 - Occupational Health and Safety Legislation and Management
- MSTM 4013 - Structure and Functions of Technology-based Organizations
- MSTM 4017 - Technical Operations Management
- MSTM 4050 - Introduction to Quality Management
- MSTM 4090 or BUSINESS 1000 - Introduction to Technology or Introduction to Business in Society

**Group B Electives (Minimum of One)**

- ECONOMICS 1010 or the Former 2010 - Introduction to Microeconomics
- ECONOMICS 1020 or the Former 2020 - Introduction to Macroeconomics
- ECONOMICS 3080 - Natural Resource and Environmental Economics
- MSTM 4014 - Technology and the Environment
- MSTM 4015 - Technological Entrepreneurship
- MSTM 4016 - Technological Problem Solving
- MSTM 4030 or SOCIOLOGY 2120 - Technology in the Human Context or Technology in Society
- PHILOSOPHY 1100 - Critical Thinking
- PHILOSOPHY 2571 - Technology

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BACHELOR OF TECHNOLOGY - HEALTH SCIENCE TECHNOLOGY OPTION

- Students must take 39 credit hours with 18 credit hours from the required courses and 21 credit hours from the electives.
- At least one elective must be chosen from each of the groups A, B and C.

**Required Courses**

- 3 credit hours in English at the 1000 level
- MSTM 4019 - Research Methods
- MSTM 4025 or STATISTICS 1510 or 2500 or Equivalent - Applied Statistics
- MSTM 4040 - Project Management for Technologists
- MSTM 4060 - Advanced Technical Communications
- MSTM 4400 - Technological Assessment Project

**Group A Electives (Minimum of One)**

- BUSINESS 1101 or 2102 - Principles of Accounting or Introductory Accounting for Non-Business Students
- BUSINESS 4000 - Business Law I
- ECONOMICS 3360 - Labour Market Economics
- MSTM 4008 - Introduction to Offshore Oil and Gas
- MSTM 4011 - Introduction to Intellectual Property and its Management
- MSTM 4012 - Occupational Health and Safety Legislation and Management
- MSTM 4013 - Structure and Functions of Technology-based Organizations
- MSTM 4017 - Technical Operations Management
- MSTM 4050 - Introduction to Quality Management
- MSTM 4090 or BUSINESS 1000 - Introduction to Technology or Introduction to Business in Society

**Group B Electives (Minimum of One)**

- ECONOMICS 1010 or the Former 2010 - Introduction to Microeconomics
- ECONOMICS 1020 or the Former 2020 - Introduction to Macroeconomics
- ECONOMICS 3080 - Natural Resource and Environmental Economics
- MSTM 4014 - Technology and the Environment
- MSTM 4015 - Technological Entrepreneurship
- MSTM 4016 - Technological Problem Solving
- MSTM 4030 or SOCIOLOGY 2120 - Technology in the Human Context or Technology in Society
- PHILOSOPHY 1100 - Critical Thinking
- PHILOSOPHY 2551 or 2552 or 2553 - Health Ethics or Mental Health Ethics or Biomedical Ethics
- PHILOSOPHY 2571 - Technology

**Group C Electives (Minimum of One)**

- BIOLOGY 2040 or 2041 - Modern Biology and Human Society I or II
- PSYCHOLOGY 2010 - Biological and Cognitive Development
- PSYCHOLOGY 2020 - Social and Personality Development
- PSYCHOLOGY 2030 - Adult Development
- PSYCHOLOGY 2800 - Drugs and Behaviour

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The information provided here is subject to change. The university calendar is the final authority on university and program regulations.
ADMISSION

REQUIREMENTS

In addition to meeting the admission/readmission requirements for Memorial University, students must also meet the admission/readmission requirements for the Marine Institute and be eligible for admission in one of the following categories:

- **CATEGORY A:** applicants holding a diploma from the Marine Institute in marine engineering technology, naval architecture technology or marine engineering systems design technology, marine environmental technology
- **CATEGORY B:** applicants holding a diploma of technology in engineering/applied science technology accredited by the Canadian Technology Accreditation Board (CTAB)
- **CATEGORY C:** applicants holding a diploma of technology comparable to a Marine Institute or College of the North Atlantic three-year CTAB accredited diploma in engineering/applied science technology
- **CATEGORY D:** applicants holding a diploma of technology comparable to a College of the North Atlantic three-year CMA accredited diploma
- **CATEGORY E:** applicants holding a Certified Engineering Technologist (CET) designation or a Professional Technologist (PTech) designation along with a diploma of technology acceptable to the Admissions Committee
- **CATEGORY F:** applicants who have Canadian Forces training acceptable to the Admissions Committee

International applicants with equivalent credentials may also be considered. To apply, you must submit an application and supporting documents to Memorial University.

Upon acceptance into the program, students will be admitted to one of the two options: the Engineering and Applied Technology Option or the Health Sciences Technology Option. Students may be permitted to change their option with the approval of the Marine Institute Committee on Undergraduate Studies.

HOW TO APPLY

Applicants should submit their application to Memorial University of Newfoundland by the following deadlines:

- **FALL ADMISSION — JUNE 15** (Official transcripts due June 30)
- **WINTER ADMISSION — OCT 15** (Official transcripts due Oct 30)
- **SPRING ADMISSION — MARCH 15** (Official transcripts due March 30)

For more information and to apply online, go to www.mi.mun.ca/btech

COURSE DESCRIPTIONS

MSTM 4010 - ASSESSMENT AND IMPLEMENTATION OF TECHNOLOGY
This course (formerly Technology 4010) examines the effects of technology on the physical, socio-economic, historic, cultural and aesthetic environments. The course also addresses relevant legislation, the generation and evaluation of project/product alternatives, and the prediction, verification and mitigation of technological effects.

CR: the former Technology 4010

MSTM 4019 - RESEARCH METHODS
This course will examine the fundamental steps in the process of doing research. It will provide students with the necessary information and tools to conduct technical research and communicate their findings. This course will examine how to define a research project, how to prepare a research proposal, how to select a research methodology, how to collect and analyze data and information, and how to prepare a research project report.

MSTM 4020 - ECONOMIC MANAGEMENT FOR TECHNOLOGISTS
This course provides an introduction to the economics of technological projects. Students will study the mathematics of money, cost composition, and project evaluation, including cost comparison. They will also learn to analyse projects for decision making, including risk assessment and replacement analysis. In addition, they will learn to use suitable criteria for project selection, and to conduct sensitivity analysis.

CR: Engineering 4102, the former Technology 4020

MSTM 4025 - APPLIED STATISTICS
This course will enable the student to use descriptive statistics to report data findings, to make statistical inferences using appropriate data analysis, and to use, and interpret the output from, statistical software.

MSTM 4040 - PROJECT MANAGEMENT FOR TECHNOLOGISTS
This course will introduce the student to the interdisciplinary field of project management. The course covers the interpersonal skills necessary to successfully lead or work effectively within a project team as well as providing an overview of certain planning and scheduling tools and techniques necessary for the planning and monitoring of projects.

MSTM 4060 - ADVANCED TECHNICAL COMMUNICATIONS
This course will enhance the technical communication skills of students. The course content examines technical writing fundamentals, information gathering, analysis, and documentation; proposal preparation; technical document applications; technical report preparation; graphics preparation, and technical presentations. The course will provide students with the knowledge and skills necessary to develop proposals, reports, and presentations for technical projects.
MSTM 4000 - TECHNOLOGICAL ASSESSMENT PROJECT
This course will provide students with the opportunity to conduct an assessment and implementation plan of a technical project in their area of interest. Students will utilize the knowledge that they have obtained in the required courses and incorporate this knowledge into a final project paper.

CR: MSTM 410A/B, the former MSTM 4000, the former MSTM 4100, the former MSTM 4200, and the former Technology 4000

PR: MSTM 4019, 4040, 4060, and 4025 or Statistics 1510 or 2500 or equivalent

MSTM 4000 - INTRODUCTION TO OFFSHORE OIL AND GAS
This course will provide students with an understanding of the basic concepts of the oil and gas industry from a marine perspective. This course will cover the entire supply chain and industry structure from upstream to downstream. Topics discussed will give an overview of oil and gas; how it is explored and evaluated; extracted, refined, transported and traded.

MSTM 4001 - INTRODUCTION TO INTELECTUAL PROPERTY AND ITS MANAGEMENT
This course is an introductory course to the management of Intellectual Property Rights (IPRs). This course will cover the philosophical rationale for intellectual property rights, its technical and legal considerations, its implications to the development of science and technology and its economic impact in society.

MSTM 4002 - OCCUPATIONAL HEALTH AND SAFETY LEGISLATION AND MANAGEMENT
This course is an introduction to occupational health and safety issues in a technical/industrial context. Students will gain a knowledge and understanding of the legislative framework surrounding occupational health and safety, the assignment of responsibilities in the workplace, the management of occupational health and safety in the workplace and the importance of establishing a positive safety culture.

MSTM 4003 - STRUCTURE AND FUNCTIONS OF TECHNOLOGY-BASED ORGANIZATIONS
This course focuses on the emergence of technology-based companies and how to implement methods to increase their organizational effectiveness. This course will concentrate on the integration of three basic frameworks which include the study of technological economics and organizational progression, structural configurations and operations, and universal and contemporary approaches to organizational design. In addition it will examine the challenges that face highly dynamic industries; individual and organizational change, technological change, and national and global change.

MSTM 4004 - TECHNICAL OPERATIONS MANAGEMENT
This course introduces students to the area of operations management as it pertains to technology companies. Operations is generally considered the process by which an organization converts inputs such as labour and material into outputs such as goods or services. This course will examine how to manage the processes with a particular emphasis on operations in technology-based companies. Topics may include operations based strategy, processes and technology, capacity and facilities planning, and supply chain management.

MSTM 4005 - INTRODUCTION TO QUALITY MANAGEMENT
This course (formerly Technology 4050) will provide students with an understanding of the philosophy and concepts involved in the total quality approach to quality management. The course covers the various tools and techniques used in quality management as well as providing an overview of the role of management.

CR: the former Technology 4050

MSTM 4006 - SPECIAL TOPICS IN TECHNOLOGY
This course will provide the opportunity for students to maintain technical currency through a review of recent advances in technology and their application to particular technical areas.

MSTM 4007 - INTRODUCTION TO TECHNOLOGY
This course will provide a broad survey of practices critical to operating a technology-based business. Topics covered may include an introduction to technology management, historical developments in the management of technology, the functions of technology management, and select current topics that are relevant to operating technology-based businesses.

MSTM 4008 - TECHNOLOGY AND THE ENVIRONMENT
This course will help students critically examine technology and the environment and how the two are linked. Topics may include how technology is both the cause of and solution to many environmental problems; the greenhouse effect, renewable energy vs. fossil fuels, recycling vs. landfills, the efficiency paradox, geo-engineering, and other select current topics.

MSTM 4009 - TECHNOLOGICAL ENTREPRENEURSHIP
This course surveys technological entrepreneurship via examples of both successful and failed businesses in technological fields. By examining cases of entrepreneurship, this course will examine challenges and opportunities facing technological entrepreneurs.

MSTM 4010 - TECHNOLOGICAL PROBLEM SOLVING
This course will introduce students to TRIZ, a powerful set of tools and algorithms developed specifically for analyzing and solving technological problems. TRIZ was developed by people with a technical background for those with a technical background. While TRIZ was developed for inventing and solving technical problems, the tools and approaches can be used to understand and solve virtually any solvable problem.

MSTM 4011 - TECHNOLOGY IN THE HUMAN CONTEXT
This course (formerly Technology 4030) examines technology in the historical context and technology in the modern era. Students will discuss human insights, innovation, the interactions between development and technology transfer, ethics and professionalism and how to develop a technology value system.

CR: the former Technology 4030

PR: Prerequisite course CR: Co-requisite course
PROGRAM DELIVERY AND SUPPORT

The overall structure of this program is course-based with delivery options available in class, and online by the Fisheries and Marine Institute of Memorial University of Newfoundland.

Online courses are fully supported by The Centre for Innovation in Teaching and Learning (CITL). For online courses, Brightspace is used as the main content delivery system and provides a virtual classroom for each program course. Students can avail of 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 doctorate 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
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/btech

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