

FISHERIES AND MARINE INSTITUTE

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www.mi.mun.ca

Vice-President (Marine Institute)

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Up-to-date personnel listings are available at www.mi.mun.ca/departments.

1 The Memorial University of Newfoundland Code

The attention of all members of the University community is drawn to the section of the University Calendar titled **The Memorial University of Newfoundland Code**, which articulates the University's commitment to maintaining the highest standards of academic integrity.

2 Student Code of Conduct

Memorial University of Newfoundland expects that students will conduct themselves in compliance with University Regulations and Policies, Departmental Policies, and Federal, Provincial and Municipal laws, as well as codes of ethics that govern students who are members of regulated professions. The *Student Code of Conduct* outlines the behaviors which the University considers to be non-academic misconduct offences, and the range of remedies and/or penalties which may be imposed. Academic misconduct is outlined in **UNIVERSITY REGULATIONS - Academic Misconduct** in the University Calendar.

For more information about the *Student Code of Conduct*, see www.mun.ca/student.

3 School Description

The Fisheries and Marine Institute was established in 1964 as the College of Fisheries, Navigation, Marine Engineering and Electronics. It became affiliated with the University in 1992 and since then has continued to grow as a world-class centre of marine technology and education. The official name is the Fisheries and Marine Institute of Memorial University of Newfoundland, but it is commonly known as the Marine Institute.

The main campus of the Marine Institute overlooks the city of St. John's from within Pippy Park, which has extensive hiking trails and recreational facilities. This building houses a flume tank, a seafood processing plant, freshwater aquaculture research and development facilities, and extensive marine simulation facilities. The Dr. C. R. Barrett Library, located at this campus, houses one of Canada's largest marine-related collections. In addition, the Institute manages the Offshore Safety and Survival Centre (OSSC) in Foxtrap, the Safety and Emergency Response Training (SERT) Centre in Stephenville, a regional fisheries and marine training center in Lewisporte, and a marine base in Holyrood.

The Marine Institute provides a full range of programs focussing on fisheries and marine science and technology. In addition to undergraduate and graduate degrees, the Institute offers advanced diplomas, diplomas of technology, and technical and vocational certificates. The Institute also runs a variety of short courses and industrial response programs.

All programs and courses are designed to provide students with the knowledge and skills required for success in the workforce. The Institute seeks the advice of industrial program advisory committees in the ongoing development and review of programs. Whenever appropriate, it submits programs for national accreditation, providing graduates with mobility in professional employment.

For information concerning fees and charges, see the Financial and Administrative Services website at www.mun.ca/finance/fees/.

For information concerning scholarships, bursaries and awards, see www.mun.ca/scholarships/scholarships.

3.1 The Marine Institute Students' Union (MISU)

The Marine Institute Students' Union (MISU) was incorporated in 1991. It is committed to the provision of services to students as well as representing the student body at the national, provincial and institute levels in matters affecting the quality of student life.

The MISU is a prominent member of the Canadian Federation of Students (CFS). The CFS provides a voice for students at over 70 universities, colleges, and technical institutes across Canada including more than 32,000 students in Newfoundland and Labrador. The national body has a strong presence in Ottawa and ensures students' opinions are known on Parliament Hill. Services provided by CFS include the National Student Health Network, student saver cards, Student Work Abroad Program (SWAP), International Student Identity Cards (ISIC), and Travel Cuts. The CFS Newfoundland and Labrador (CFS-NL) ensures students' opinions are known in the Provincial House of Assembly. The MISU takes part in the CFS bi-annual conferences to discuss and form policies on behalf of students.

Within the Institute, the MISU has representation on a number of committees, including the Marine Institute Industry Advisory committee and the Academic Council, where the Union members ensure that student well-being is at the forefront in all policies affecting student life. The MISU administers the student health plan. Many social and recreational activities are planned and sponsored by the MISU including Winter Carnival held during the last week of January. Profits from the social activities are returned to the students in the form of scholarships. The MISU manages and maintains the student lounge -The Mariner's Lounge.

4 Description of Degree Programs

Students must meet all regulations of the Marine Institute in addition to those stated in the **UNIVERSITY REGULATIONS - General Academic Regulations (Undergraduate)**. For information concerning admission/readmission to the University and general academic regulations (undergraduate), refer to **UNIVERSITY REGULATIONS**.

For information about non-degree programs and upgrading opportunities refer to www.mi.mun.ca.

4.1 General Degrees

The Marine Institute offers two undergraduate degrees. For specific details on each degree refer to the appropriate **Degree Program Regulations**. The courses in the program are available fully by distance and select courses are available on campus.

4.1.1 Bachelor of Maritime Studies

The Bachelor of Maritime Studies program prepares graduates for career advancement in Maritime Management or Safety Management industries. It is designed for students who have graduated from an accredited diploma of technology program that is applicable to one of two major areas of study. 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. The program consists of 39 credit hours in addition to work completed in a diploma program and can be taken on a full-time or part-time basis.

The major areas of study are:

4.1.1.1 Major in Maritime Management

The Major in Maritime Management is normally chosen by students who have graduated from accredited, or Transport Canada approved, diploma of technology programs in the marine fields.

4.1.1.2 Major in Safety Management

The Major in Safety Management is open to all students eligible for the Major in Maritime Management but also includes any student holding a three-year CTAB or TAC accredited technology diploma or those having a CRSP designation.

4.1.2 Bachelor of Technology

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 two major areas of study. 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. The program consists of 39 credit hours in addition to work completed in a diploma program and can be taken on a full-time or part-time basis.

The major areas of study are:

4.1.2.1 Major in Engineering and Applied Science Technology

The Engineering and Applied Science Technology Major is normally chosen by students who have an engineering/applied science technology diploma.

4.1.2.2 Major in Health Sciences Technology

The Health Sciences Technology Major is normally chosen by students who have a health sciences technology diploma.

5 Admission/Readmission Regulations for Degree Programs

In addition to meeting the admission/readmission requirements for the University, students must also meet the admission/readmission requirements for the Marine Institute. See **UNIVERSITY REGULATIONS - Admission/Readmission to the University (Undergraduate)** for University requirements.

5.1 General Information

1. The application for admission or readmission is submitted online; current and returning Marine Institute applicants should apply using the Admissions menu within Memorial Self-Service at www5.mun.ca/admit/twbkwbis.P_WWWLogin. Applicants who are new to the Marine Institute should follow the application instructions at www.mun.ca/undergrad/apply.

Table 1 Application Deadlines

Fall	June 30 (Official transcripts due July 15)
Winter	October 15 (Official transcripts due October 30)
Spring	March 15 (Official transcripts due March 30)

2. Students may not obtain both a Bachelor of Maritime Studies and a Bachelor of Technology degree based upon completion of the same diploma of technology.
3. Students may not obtain a Bachelor Maritime Studies in more than one major. Students wishing to further their studies in either Maritime Management or Safety Management are strongly encouraged to apply to the School of Graduate Studies for either the Master of Maritime Management program or the Post Graduate Certificate in Safety Management.

5.2 Admission Requirements for Applicants to the Bachelor of Maritime Studies Program

1. The application for admission or readmission is submitted online; current and returning Marine Institute applicants should apply using the Admissions menu within Memorial Self-Service at www5.mun.ca/admit/twbkwbis.P_WWWLogin. Applicants who are new to the Marine Institute should follow the application instructions at www.mun.ca/undergrad/apply. This application must include all required documentation including proof of the diploma or certificate required for admission in a specific category.
2. **Categories for admission to the Bachelor of Maritime Studies, Major in Maritime Management**
Applicants must meet the general admission/readmission requirements of the University and be eligible for admission to the Bachelor of Maritime Studies, Major in Maritime Management program in one of the following categories:
 - Category A: applicants holding a diploma from the Marine Institute in nautical science, marine engineering technology, naval architecture technology or marine engineering systems design technology,
 - Category B: applicants holding a Canadian Technology Accreditation Board accredited, or Transport Canada approved, diploma in marine engineering technology or nautical science,
 - Category C: applicants holding a Canadian or non-Canadian diploma similar to an accredited or Transport Canada approved Marine Institute diploma in nautical science, marine engineering technology, naval architecture technology or marine engineering systems design technology,
 - Category D: applicants holding a Transport Canada Certificate of Competency at the Master Mariner, Fishing Master First Class or Engineering First Class level or equivalent,
 - Category E: applicants who have Canadian Forces (Naval Operations) training acceptable to the Admissions Committee.
3. **Categories for admission to the Bachelor of Maritime Studies, Major in Safety Management**
Applicants must meet the regular admission requirements of the University and be eligible for admission to the Bachelor of Maritime Studies - Major in Safety Management program in one of the following categories:
 - Category A: applicants holding a diploma from the Marine Institute in nautical science, marine engineering technology, naval architecture technology, marine engineering systems design technology, marine environmental technology, or food technology
 - Category B: applicants holding a diploma of technology in engineering/applied science technology accredited by the Canadian

Technology Accreditation Board (CTAB), or Technology Accreditation Canada (TAC);

- Category C: applicants holding a diploma of technology comparable to a Marine Institute or College of the North Atlantic three-year accredited diploma;
 - Category D: applicants who have Canadian Forces training acceptable to the Admissions Committee;
 - Category E: applicants who hold a Canadian Registered Safety Professional (CRSP) designation.
4. Applications to the program will be considered by the appropriate admissions committee(s).
 5. In accordance with the **UNIVERSITY REGULATIONS - Residence Requirements - Second Degree**, students completing the Bachelor of Maritime Studies program, as a second degree, must complete all required courses in their major area of study within the Bachelor of Maritime Studies program.

5.3 Admission Requirements for Applicants to the Bachelor of Technology Program

1. The application for admission or readmission is submitted online; current and returning Marine Institute applicants should apply using the Admissions menu within Memorial Self-Service at www5.mun.ca/admit/twbkwbis.P_WWWLogin. Applicants who are new to the Marine Institute should follow the application instructions at www.mun.ca/undergrad/apply. This application must include all required documentation including proof of the diploma or certificate required for admission in a specific category.
2. **Categories for admission to the Bachelor of Technology Program**
Applicants must meet the regular admission requirements of the University and be eligible for admission in one of the following categories:
 - Category A: applicants holding a diploma of technology, excluding nautical science, from the Marine Institute,
 - Category B: applicants holding a diploma of technology accredited by the Canadian Technology Accreditation Board (CTAB) or Technology Accreditation Canada (TAC), or the Canadian Medical Association (CMA),
 - Category C: applicants holding a diploma of technology comparable to a Marine Institute diploma of technology,
 - Category D: 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 E: applicants who have Canadian Forces training acceptable to the Admissions Committee,
 - Category F: applicants who hold a diploma of technology from an institution with which the Marine Institute has an articulation agreement.
3. Upon acceptance into the program, students will be admitted to one of the two majors: the Major in Engineering and Applied Science Technology or the Major in Health Sciences Technology. Students may be permitted to change their major with the approval of the Marine Institute Committee on Undergraduate Studies.
4. Applications to the program will be considered by the appropriate admissions committee(s).
5. In accordance with the **UNIVERSITY REGULATIONS - Residence Requirements - Second Degree**, students completing the Bachelor of Technology program, as a second degree, must complete all required courses in their major area of study within the Bachelor of Technology program.

6 Degree Program Regulations

6.1 Bachelor of Maritime Studies

6.1.1 Maritime Management Major

- Students must complete 39 credit hours in addition to the work which was required under their category of admission.
- The required and elective courses are listed in **Table 2 Bachelor of Maritime Studies - Maritime Management Major**.
- A maximum of 9 transfer credit hours applicable to the degree may be used to meet the degree requirements.
- When transfer credit has been granted for a course(s) taken to satisfy the requirements for admission, students must take an additional elective University course(s).
- To meet the academic requirements for a Bachelor of Maritime Studies a candidate shall successfully complete the following program with a minimum overall average of 60% and a minimum numeric grade of 50% in each course required for the degree unless stated otherwise within the course description.
- Students must take 39 credit hours with 21 credit hours from the required courses and 18 credit hours from the electives.
- At least three electives must be chosen from Group A and at least one elective must be chosen from Group B.

Table 2 Bachelor of Maritime Studies - Maritime Management Major

Required Courses	Group A Electives	Group B Electives
3 credit hours in a Critical Reading and Writing (CRW) course MARI 4001 MARI 4002 MARI 4103 MARI 4105 MARI 4106 TECH 4025 or Statistics 1510 or 2500	MARI 4005 MARI 4006 MARI 4007 MARI 4008 MARI 4101 MARI 4102 MARI 4104 MARI 4107	Business 1101 or 2102 Business 4000 Economics 1010 or the former 2010 Economics 1020 or the former 2020 Geography 3510 MARI 4004 TECH 4019 TECH 4020 TECH 4030 TECH 4040 TECH 4050 Philosophy 2330 or the former 2571 Sociology 2120

6.1.2 Safety Management Major

- Students must complete 39 credit hours in addition to the work which was required under their category of admission.
- The required and elective courses are listed in **Table 3 Bachelor of Maritime Studies - Major in Safety Management**.
- When transfer credit has been granted for a course(s) taken to satisfy the requirements for admission, students must take an additional elective University course(s).
- To meet the academic requirements for a Bachelor of Maritime Studies a student shall successfully complete the program with a minimum overall average of 60% and a minimum numeric grade of 50% in each course required for the degree unless stated otherwise within the course description.
- Students must take 39 credit hours with 27 credit hours from the required courses and 12 credit hours from the electives.
- At least two electives must be chosen from Group A and at least one elective must be chosen from Group B.

Table 3 Bachelor of Maritime Studies - Safety Management Major

Required Courses	Group A Electives	Group B Electives
3 credit hours in a Critical Reading and Writing (CRW) course MARI 4004 MARI 4101 MARI 4104 MARI 4107 MARI 4108 MARI 4109 MARI 4110 MARI 4111	MARI 4001 MARI 4008 MARI 4112 MARI 4113 MARI 4114 TECH 4025 or Statistics 1510 or 2500	Business 1101 or 2102 MARI 4002 MARI 4106 TECH 4019 TECH 4040 Philosophy 1100 Philosophy 2330 Sociology 2120 or TECH 4030

6.2 Bachelor of Technology

- Students must complete 39 credit hours in addition to the work which was required under their category of admission.
- The required and elective courses are listed in **Table 4 Bachelor of Technology - Engineering and Applied Science Technology Major** and **Table 5 Bachelor of Technology - Health Science Technology Major**.
- A maximum of 9 transfer credit hours applicable to the degree may be used to meet the degree requirements.
- When transfer credit has been granted for a course(s) taken to satisfy the requirements for admission, students must take an additional elective University course(s).
- To meet the academic requirements for a Bachelor of Technology a candidate shall successfully complete the program with a minimum overall average of 60% and a minimum numeric grade of 50% in each course required for the degree unless stated otherwise within the course description.

6.2.1 Engineering and Applied Science Technology Major

- Students must take 39 credit hours with 24 credit hours from the required courses and 15 credit hours from the electives.
- At least one elective must be chosen from each of the groups A and B.

Table 4 Bachelor of Technology - Engineering and Applied Science Technology Major

Required Courses	Group A Electives	Group B Electives
3 credit hours in a Critical Reading and Writing (CRW) course TECH 4010 TECH 4019 TECH 4020 TECH 4025 or Statistics 1510 or 2500 or equivalent TECH 4040 TECH 4060 TECH 4400	Business 1101 or 2102 Business 4000 Economics 3360 MARI 4008 TECH 4011 TECH 4012 TECH 4013 TECH 4017 TECH 4050 TECH 4070 TECH 4080 TECH 4090 or Business 1000	Economics 1010 or the former 2010 Economics 1020 or the former 2020 Economics 3080 TECH 4014 TECH 4015 TECH 4016 TECH 4030 or Sociology 2120 or Geography 3015 or Sociology 3015 TECH 4055 Philosophy 1100 Philosophy 2330 or the former 2571

6.2.2 Health Science Technology Major

- 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.

Table 5 Bachelor of Technology - Health Science Technology Major

Required Courses	Group A Electives	Group B Electives	Group C Electives
3 credit hours in a Critical Reading and Writing (CRW) course TECH 4019 TECH 4025 or Statistics 1510 or 2500 or equivalent TECH 4040 TECH 4060 TECH 4400	Business 1101 or 2102 Business 4000 Economics 3360 MARI 4008 TECH 4011 TECH 4012 TECH 4013 TECH 4017 TECH 4050 TECH 4090 or Business 1000	Economics 1010 or the former 2010 Economics 1020 or the former 2020 Economics 3080 TECH 4014 TECH 4015 TECH 4016 TECH 4030 or Sociology 2120 or Geography 3015 or Sociology 3015 TECH 4055 TECH 4080 Philosophy 1100 Philosophy 2100 or the former 2551; 2110 or the former 2553; 2120 or the former 2552 Philosophy 2330 or the former 2571	Biology 2040 or 2041 Psychology 1000 Psychology 2010 Psychology 2020 Psychology 2030 Psychology 2800 TECH 4110

7 Waiver of Degree Program Regulations

Students requesting waiver of University academic regulations should refer to **UNIVERSITY REGULATIONS - General Academic Regulations (Undergraduate) - Waiver of Regulations**. Every student also has the right to request waiver of degree program regulations.

7.1 General Information

- The Marine Institute reserves the right in special circumstances to modify, alter, or waive any Marine Institute regulation in its application to individual students where merit and equity so warrant, in the judgement of the Committee on Undergraduate Studies of the Marine Institute.
- Students requesting a waiver of a Marine Institute regulation must submit their request in writing to the head of the program who will forward a recommendation to the Chair of the Committee on Undergraduate Studies of the Marine Institute. Medical and/or other documentation to substantiate the request must be provided.
- Any waiver granted does not reduce the total number of credit hours required for the degree.

8 Graduation

Upon meeting the qualifications for any of the degree programs of the Fisheries and Marine Institute a student must apply by the appropriate deadline date to graduate on the prescribed "Application for Graduation" form. This form may be obtained on-line at the Memorial Self Service at www.mun.ca/regoff/stuweb.htm. Additional information is available from the Office of the Registrar at www.mun.ca/regoff/graduation.

9 Appeal of Decisions

Any student whose request for waiver of Marine Institute regulations has been denied has the right to appeal. For further information refer to **UNIVERSITY REGULATIONS - General Academic Regulations (Undergraduate) - Appeal of Decisions**.

10 Course Descriptions

10.1 Maritime Studies

Maritime Studies courses are designated by MARI.

4001 The Organization and Issues of Shipping (same as the former MSTM 4001) provides students with knowledge of the economic shipping environment with respect to Canada. The course will develop an understanding of basic trade theory, patterns of trade and sea routes, commodities traded by sea, and the organizational structure of shipping companies.

CR: the former Engineering 8065; the former MSTM 4001

4002 The Business of Shipping (same as the former MSTM 4002) provides students with an understanding of financial statements, costs, revenues and financial performance of shipping companies as well as computing, voyage and annual cashflows. The course will develop an understanding of marine insurance and forecasting, and risk management.

CR: the former MSTM 4002

PR: MARI 4001

4004 Marine Environmental Management (same as the former MSTM 4004) introduces students to the requirements for the safe management of the marine environment. This course will introduce major environmental problems and identify the major threats to the marine environment. It will provide a working knowledge of these threats and consider the possible counter measures that may be employed by employees in the marine industry.

CR: the former MSTM 4004

4005 Trends and Issues in International Shipping (same as the former MSTM 4005) provides students with an understanding of how regulatory bodies and their legislation have evolved to affect the modern seafarer trading internationally. This course will develop an understanding of the various rules and regulations dealing with Classification, ISM, MAPROL, SOLAS and SIRE inspections which have to be dealt with on a daily basis at sea.

CR: the former MSTM 4005

4006 Maritime Human Resource Management (same as the former MSTM 4006) provides basic principles of HRM in terms of seagoing and shore-based personnel. Students will analyze the world maritime labour market, HRM practices, outsourcing and international conventions. This course stresses the importance of coherent maritime HRM systems required to gain a sustainable competitive advantage.

CR: the former MSTM 4006

4007 Shipping Finance (same as the former MSTM 4007) focuses on commercial ship management and the critical evaluation of alternative financial decisions. It analyzes the principles of financial ship management and the impact of global economic variables on the financial operations and performance of shipping companies. The course provides an appreciation of critical questions, problems, issues and alternative approaches incorporated in shipping finance. This will support and facilitate the conduct of meaningful

financial analysis and managerial decision-making for investments and fund raising in shipping business.

CR: the former MSTM 4007

4008 Introduction to Offshore Oil and Gas (same as the former MSTM 4008) provides 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.

CR: the former MSTM 4008

4101 Maritime Occupational Safety and Health (Legislation and Regulations) (same as the former MSTM 4101) provides students with the knowledge and understanding to manage the legislative framework within the workplace and show the importance of establishing a positive safety culture with specific focus on the maritime industry.

CR: the former MSTM 4101

4102 Maritime Risk Management/Accident Incident Investigation (same as the former MSTM 4102) provides students with the knowledge of methodologies and practices needed to manage operational risk in today's maritime industry. Risk management will be analyzed in the context of prevention and mitigation of loss resulting from health and safety, equipment, and environmental accidents and incidents. The course will further explore methodologies and practices used to investigate accident and incident occurrences in the maritime industry.

CR: the former MSTM 4102

4103 Advanced Communications for the Maritime Sector (same as the former MSTM 4103) equips students to write a variety of formal and informal maritime-related technical documents; develops students' capabilities in gathering and critically analysing information from technical sources and constructing a clear message; and prepares students to develop and deliver oral technical presentations.

CR: the former MSTM 4103

4104 Integrated Management Systems in Maritime Industries (same as the former MSTM 4104) offers a firsthand knowledge of a systematic, comprehensive process for managing safety risks. A safety management system program provides for goal setting, planning, and measuring performance. It becomes part of the company's safety culture, as well as the way people do their jobs.

CR: the former MSTM 4104

4105 Policy and Governance in the Maritime Industry (same as the former MSTM 4105) provides the student with an understanding of the maritime industry as a global enterprise in the context of policy and governance. It will focus on the full range of the regulatory framework from the standpoint of the International Maritime Organization to the statutory regulations applicable to the Canadian maritime industry.

CR: the former MSTM 4105

4106 Ship Operations Management (same as the former MSTM 4106) provides comprehensive knowledge of global ship management practices supporting the function of ship operations management, both ashore and at

sea. This course aims to develop the student's understanding of management issues in marine transportation as they relate to basic principles of management; management in multi-ethnic environments; managing under adverse conditions; the SOLAS Convention and the ISM and ISPS Codes; the International Labour Organization and the MLC Convention; the International Transport Federation; and, Port State Control.
CR: the former MSTM 4106

4107 Communications and Conflict Management provides students with the knowledge, tools and strategies to effectively manage and resolve conflicts in the workplace. The necessary communication skills taught in this course will allow students to respond to interpersonal and organizational conflicts in a collaborative manner to ensure a safe and productive workplace.

4108 Emergency Management and Preparedness in the Maritime Sector introduces the emergency management concepts, theories and skills required to assume a command or support role in an emergency situation at sea. The course introduces the student to key positions, responsibilities and expectations of the marine emergency team. Relevant legislation, guidelines and differences between the shipping industry and offshore oil and gas industry regarding their operational structures and emergency management operational plans will also be investigated.

4109 Human Factors in the Maritime Sector addresses the application of our understanding of human characteristics to the design of equipment and environments in which people perform and learn. Framed within a maritime context, this course provides an overview of human capabilities and limitations, and how they interact with the design, use and learning of systems, controls and displays.

4110 Risk Management in the Maritime Sector provides a solid grounding in knowledge and skills required to interpret, evaluate, communicate, and manage risk in the maritime sector. Utilizing a variety of case studies, the course covers risk assessment methodologies and provides a practical approach to conducting, reviewing, and evaluating risk assessments. The course reviews regulatory requirements and discusses the importance and challenges (including the human element) of effective risk management. Students will also conduct article reviews as part of their study.

4111 Incident/Accident Investigation in the Maritime Sector provides a solid grounding in the knowledge and skills required to conduct a near-miss and incident / accident investigation. Utilizing a variety of case studies, the course covers incident investigation / root cause analysis methodologies and provides a framework to conduct an investigation, analyse the information, implement corrective actions, and write the investigation report. Students will also review and critique investigation reports as part of their study.

4112 Quality Systems and Organizational Management examines the theory and application of quality management systems (QMS). It also provides direction for the integration of a QMS into an overall management system that addresses occupational health and safety as well as environment.

4113 Maritime Security Management examines contemporary port, coastal and ocean security issues. It explores the roles of national and international agencies, international conventions, security audits, and inspections. The course also explores maritime security risk assessment methodologies that enable organizations to make organizational and operational decisions to mitigate maritime security risks. Utilizing a variety of case studies and security assessment methodologies the course will provide a practical approach to conducting, reviewing, and evaluating maritime security risk assessments.

4114 Maritime Environmental Health focuses on the rise in the number of work-related diseases worldwide, relative to traumatic injuries, which has led to an increased focus on occupational health hazards in the workplace. Exposure to physical, chemical, biological, psychosocial and ergonomic factors as major concerns in occupational health and safety, as well as an awareness of these hazards and the associated health effects as an important step in their recognition and control, will also be covered.
PR: MARI 4101 or the former MSTM 4101

10.2 Technology

Technology courses are designated by TECH.

4010 Assessment and Implementation of Technology (same as the former MSTM 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 MSTM 4010

4011 Introduction to Intellectual Property and its Management (same as the former MSTM 4011) introduces students 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.

CR: the former MSTM 4011

4012 Occupational Health and Safety Legislation and Management (same as the former MSTM 4012) introduces students 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.
CR: the former MSTM 4012

4013 Structure and Functions of Technology-based Organizations (same as the former MSTM 4013) 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 of change that face highly dynamic industries: individual and organizational change, technological change, and national and global change.
CR: the former MSTM 4013

4014 Technology and the Environment (same as the former MSTM 4014) helps 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.
CR: the former MSTM 4014

4015 Technological Entrepreneurship (same as the former MSTM 4015) 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.
CR: the former MSTM 4015

4016 Technological Problem Solving (same as the former MSTM 4016) introduces 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.
CR: the former MSTM 4016

4017 Technical Operations Management (same as the former MSTM 4017) 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.
CR: the former MSTM 4017

4019 Research Methods (same as the former MSTM 4019) examines 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.
CR: the former MSTM 4019

4020 Economic Management for Technologists (same as the former MSTM 4020) 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 MSTM 4020

4025 Applied Statistics (same as the former MSTM 4025) enables 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.
CR: the former MSTM 4025

4030 Technology in the Human Context (same as the former MSTM 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 MSTM 4030

4040 Project Management for Technologists (same as the former MSTM 4040) introduces 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.

CR: the former MSTM 4040

4050 Introduction to Quality Management (same as the former MSTM 4050) provides 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 MSTM 4050

4055 Marine Renewable Energy (same as the former MSTM 4055) provides students with an overview of MRE resources, introduces current and emerging technologies to exploit MRE resources, and places these technologies in context with environmental, political, and economic constraints.

CR: MSTM 4055

4060 Advanced Technical Communications (same as the former MSTM 4060) enhances 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.

CR: MSTM 4060

4070 Special Topics in Technology (same as the former MSTM 4070) provides the opportunity for students to maintain technical currency through a review of recent advances in technology and their application to particular

technical areas.

CR: MSTM 4070

4080 Maintenance Management provides an introduction to maintenance management systems, to devise maintenance strategies and to utilize risk management strategies using statistical analysis and computerized maintenance management systems.

4090 Introduction to Technology (same as the former MSTM 4090) provides 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.

CR: MSTM 4090

4110 Health Care Management provides an introduction to health care management. Students will study leadership, change management, strategic planning, quality, and teamwork. They will also learn to analyze and examine health care related case studies. In addition, they will learn to research and analyze current health management issues which exist.

4400 Technological Assessment Project (same as the former MSTM 4400) provides 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: the former MSTM 410A/B, the former MSTM 4000, the former MSTM 4100, the former MSTM 4200, the former MSTM 4400 and the former Technology 4000

PR: one of TECH 4019 or the former MSTM 4019, one of TECH 4040 or the former MSTM 4040, one of TECH 4060 or the former MSTM 4060, and TECH 4025 or Statistics 1510 or 2500 or equivalent