

FISHERIES AND MARINE INSTITUTE OF MEMORIAL UNIVERSITY OF NEWFOUNDLAND

ACADEMIC CALENDAR 2014 - 2015

Published by:

Office of the Registrar
and
Marketing and Communications

Cover Design:

Marketing and Communications

Inside Layout:

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This Prospectus sets forth the intentions of the Institute at the time of its publication with respect to all matters contained therein. The Institute reserves the right to deviate from what appears in the Prospectus and to add, delete, revise or cancel particular courses or programs in order to serve the best interests of the academic community or because of circumstances or occurrences beyond the Institute's control. The Institute cannot accept responsibility or liability to any person or persons who may suffer loss or who may be otherwise adversely affected by such change.

All tuition and other fees quoted in this Prospectus are subject to change without notice.

The Office of the Registrar will assist students with any questions or problems which might arise concerning the interpretation of academic regulations. It is, however, the responsibility of the students to see that their academic programs meet the Institute's regulations in all respects.

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MISSION

To foster economic development in strategic sectors of the Newfoundland economy, particularly the fisheries and offshore, and to enable Newfoundlanders to participate in the Marine Industry nationally and internationally.

MANDATE

The Mandate of the Marine Institute is to provide education and training, applied research and technology transfer in support of our client industries on a national and international basis. Overall, the Marine Institute is committed to providing a learning environment in which students can reach their full potential. We aim to design and deliver programs that provide graduates with highly competitive skills and abilities. We encourage excellence in teaching and learning, and seek to provide the industrial community with relevant, high quality, applied research and technology transfer.

This mission provides for the development of the Institute as an industrially relevant institution. A range of Master's Degree, Advanced Diploma, Bachelor's Degree, Diploma of Technology, Joint Diploma Degree, Post Graduate Certificate, Technician Diploma and Technical Certificate programs are offered, together with a variety of industry-oriented short courses. The Marine Institute's vision for the future is *to be a World Oceans Institute, setting the standard in education, training, innovation, and research.* This vision will shape the goals of the Institute, guide its activities, strengthen its expertise, and advance its reputation for ocean excellence globally.

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FISHERIES AND MARINE INSTITUTE OVERVIEW

HISTORY

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 in Foxtrap, the Safety and Emergency Response Training (SERT) Centre in Stephenville, a regional fisheries and marine training centre in Lewisporte and a marine base on the south side of St. John's harbor and another in Holyrood.

The Marine Institute provides a full range of programs focusing on fisheries and marine science and technology. In addition to undergraduate and graduate degrees, the Institute offers advanced diplomas, diplomas of technology, and technical 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.

PROGRAMS

Programs offered by the Marine Institute provide graduates with the knowledge, skills and experience appropriate for success in the workforce. They fall into three categories, each addressing the particular needs of the industry and the specific goals of the Newfoundland post-secondary education system.

Advanced Diploma, Diploma of Technology and Technician Diploma programs are offered for the new generation of industry professionals, including those entering specific industrial niches requiring highly developed technical skills.

The Institute also offers, in cooperation with faculties of Memorial University, Bachelor's Degrees in Maritime Studies and Technology which are based upon existing three-year diploma programs, as well as a Master of Marine Studies in Fisheries Resource Management, Master of Technology Management, and Master of Maritime Management. The Marine Institute also participates in the administration and delivery of the Master of Science in Aquaculture.

Technical Certificate programs are offered for persons entering the work force at the basic production or technical levels. Industry response and short course professional development programs are offered to industry participants who wish to continue their professional development.

Professional development and certification in marine navigation, safety survival and fire-fighting are offered through a wide selection of training courses provided by the School of Maritime Studies. School of Fisheries short courses are offered within rural communities in harvesting, processing, safety and fisheries management.

ACCREDITATION

The standards and their industrial relevance, are validated through accreditation, where appropriate, with the Canadian Technology Accreditation Board or through certification by regulatory agencies such as Transport Canada.

Our industrial clients and partners are central to all of our program development activities. The advice of our industrial program advisory committees is sought in the ongoing development of longer programs, while short courses are designed to meet specific industry needs. Whenever appropriate, programs are submitted for national accreditation, providing graduates with mobility in professional employment.

SCHOOLS

Instructional and Industrial Response and Development activities at the Marine Institute are organized around three schools, the School of Fisheries, the School of Maritime Studies and the School of Ocean Technology and supported by the Division of Academic and Student Affairs. Theory and practice are viewed as partners in the learning process, as classroom education is continually translated into practice. Instructors are both educators and practitioners, and the student's educational experience is based upon a balanced combination of practical and theoretical knowledge. The Institute also has a strong capability in learning technology and distance education.

The role, programs and services offered by each of the three schools is described in general below. Further information regarding our programs is provided in the detailed program descriptions which follow in this calendar. Further information about our industry response and development services is available by contacting the Schools or Marine Institute Information Services.

SCHOOL OF FISHERIES

The School of Fisheries is responsible for developing and delivering education, training, and industry development services required to meet the needs of the harvesting, processing and aquaculture sectors of the seafood industry, and of the food industry in general. The School's resources are committed to developing and delivering education and training programs to meet the needs of these sectors. The School's education and training programs range from full-time programs offered at the Marine Institute's facilities on Ridge Road to a comprehensive suite of short, industry-response courses which are community-based and offered in response to specific industry and group requests.

FISHERIES AND MARINE INSTITUTE OVERVIEW

Increasingly, the School of Fisheries is moving to more on-line programs, particularly in its graduate programming (i.e. masters and post graduate certificates).

The programs offered by the School of Fisheries are as follows:

- Master of Marine Studies (Fisheries Resource Management)
- Master of Technology Management (Aquaculture Technology Option)
- Post Graduate Certificate in Food Safety
- Post Graduate Certificate in Quality Management
- Advanced Diploma in Sustainable Aquaculture
- Advanced Diploma in Integrated Coastal and Ocean Management
- Advanced Diploma in Food Safety
- Advanced Diploma in Water Quality
- Joint Diploma of Technology/Bachelor of Technology in Food Technology
- Technology Diploma in Marine Environmental Technology
- Technical Certificate in Aquaculture (Salmonid; Mussel)
- Technical Certificate in Harvesting

The School of Fisheries also offers a variety of industry response courses in Processing, Harvesting and Aquaculture. These are normally offered on a contractual basis in partnership with industry clients.

Community Based Education Delivery (CBED)

The Marine Institute has a history of delivering education and training programs in communities across Newfoundland and Labrador and in other areas of Canada. Since 1964, community based training has been a part of the Marine Institute. The Community Based Education Delivery Unit (CBED) continues this tradition, offering industrial response training. The unit's main office is located in St. John's with regional offices located in Lewisporte and Iqaluit, Nunavut.

In collaboration with industry and government CBED supports key training priorities by organizing, facilitating, and leading training in these areas:

- Aquaculture
- Environmental
- Fish Harvesting
- Food Processing

To respond to industry and community needs:

- CBED has a selection of courses developed and ready to deliver that meet standards set by Transport Canada, the Canadian Food Inspection Agency, and various international regulators.
- Through the School of Fisheries, under which CBED operates, online courses related to fish harvesting and food processing are available for clients who may want to complete training from any location.
- Customized short courses can be developed by CBED to meet the needs of developing countries.
- CBED can design training to meet your specific needs and deliver the program in your community.

Centre for Sustainable Aquatic Resources

The Centre for Sustainable Aquatic Resources, was established in 1988 to promote the sustainable development of aquatic resources through collaborative industrial research and development, technology transfer and education services to the global fishing industry.

Working collaboratively with industry, government and academia on a local, national and international level, the Centre:

- Promotes the sustainable development of aquatic resources and protection of marine and freshwater environments.
- Proactively pursues client oriented research and technology transfer projects through strategic partnerships
- Addresses the specific needs of harvesters and fishing gear manufacturers, by undertaking industrial research and development, technology transfer, education and information services in support of the fishing industry, on a general basis or through contract or joint ventures.

The Centre's facilities include the world's largest flume tank - the aquatic equivalent of a wind tunnel, underwater remote sensing equipment, underwater camera services, hydrostatic pressure testing, and a core staff of fisheries researchers with local, national and international experience in fishing gear design, fisheries sustainability and responsible harvesting and energy efficient fisheries. The Centre offers research opportunities to graduate students at Memorial University.

Centre for Aquaculture and Seafood Development

The Centre for Aquaculture and Seafood Development (C-ASD) has a solid history of building successful partnerships with other ocean research agencies such as the Ocean Sciences Centre, the Centre for Cold Ocean Resources, The National Research Council, the Institute for Marine Bio-Sciences, the Coastal Zone Research Institute; and other provincial, national and international aquaculture and seafood processing enterprises.

The C-ASD's team of scientific and technical researchers combines qualifications with multi-disciplinary industrial skills to provide assistance to clients in all areas of aquaculture and food development ranging from site evaluation services; to food processing technology design, processing automation, and testing; food product development; fish health and nutrition; and marine biotechnology. The C-ASD offers industrial applied research, technology transfer and consulting services to its clients.

Centre for Fisheries Ecosystems Research

The Centre for Fisheries Ecosystems Research (CFER) was established at the Marine Institute in 2010. The Centre's goal is to perform fisheries research that will gain better understanding of fish stocks and productivity in Newfoundland and Labrador's marine ecosystem. This, in turn, will enable the province to assist in federal and international fisheries management.

Specifically, CFER's mandate is to:

- focus research on Newfoundland and Labrador fisheries and the sustainability of stocks and their fisheries

FISHERIES AND MARINE INSTITUTE OVERVIEW

- offer research and training opportunities to graduate students both locally and internationally
- collaborate with the Department of Fisheries and Aquaculture and Fisheries and Oceans Canada for research activities and fisheries management
- collaborate with other researchers and institutions within Canada and worldwide

SCHOOL OF MARITIME STUDIES

The School of Maritime Studies is responsible for education and training programs to prepare Newfoundlanders and Labradorians for careers in the marine transportation industry. Current programming is focused on preparing deck and engineering officers for vessel operations and preparing professionals for the associated marine technology sectors.

Programs currently offered by the School of Maritime Studies include

- Master of Maritime Management
- Bachelor of Maritime Studies
- Diploma of Technology in Marine Engineering Systems Design
- Diploma of Technology in Marine Engineering Technology
- Diploma of Technology in Naval Architecture
- Diploma of Technology in Nautical Science
- Technical Certificate in Marine Diesel Mechanics
- Technical Certificate in Fire Rescue
- Technical Certificate in Bridge Watch Program

A number of programs offered by the Marine Institute involve compulsory work placement. Services to support student employment are offered through the Marine Institute's Placement Office.

Industry response and development services of the School of Maritime Studies are offered through the following specialized Centres:

Offshore Safety and Survival Centre

The Offshore Safety and Survival Centre (OSSC) undertake training and research to improve marine safety standards. Instruction and practical training for client groups are provided at the Marine Institute's Southside Marine Base, located on the south side of St. John's harbour, and at a purpose-built training Centre located in Foxtrap, approximately 30 km from St. John's.

Staffed by qualified Transport Canada approved faculty, training in safety, survival and emergency response is provided through laboratory demonstrations, classroom instruction and practical hands-on simulated emergency exercises. The OSSC is also actively involved in research aimed at improvements to marine and offshore safety.

Training courses offered by the OSSC are accredited by Transport Canada; Canada-Newfoundland and Labrador Offshore Petroleum Board (CNLOPB); Canada Nova Scotia Offshore Petroleum Board (CNSOPB); Petroleum Industry Training Service; National Fire Protection Association (NFPA); International Fire Service Training Association (IFSTA) and St. John Ambulance.

The facilities of the OSSC are world class and include a survival tank equipped with an environmental simulation system; a helicopter underwater escape trainer (HUET); a large environmentally safe fire field outfitted with marine and offshore fire training simulators; a range of lifeboat/rescue capsules, fast rescue craft and a sea going vessel.

The OSSC offers over 75 different courses to individuals and industry clients on a regular basis throughout the year. In addition, the OSSC has the capability to customize courses in its areas of specialty to meet specific client needs.

Safety and Emergency Response Training (SERT) Centre

The Safety and Emergency Response Training (SERT) Centre is located in Stephenville on the west coast of Newfoundland. It was established to respond to the need in Atlantic Canada for a facility to train air crash firefighters and it was enhanced to include the municipal fire-fighting training program. The SERT Centre offers training courses in aviation, marine and industrial safety, and emergency response, which respond to the training needs of industries and individuals in Atlantic Canada.

Centre for Marine Simulation

The Centre for Marine Simulation (CMS) trains marine personnel to meet routine and emergency situations through simulator training and is also involved in the development of new vessel management techniques and in marine industry research. Research areas include: equipment testing, testing of operators, crew familiarization, and the development and testing of operational procedures. The CMS facilities include: a full mission ship's bridge simulator, a ballast control room simulator, a marine engine/control room simulator, an electronic navigation simulator, a dynamic positioning simulator, a tug simulator and a global maritime distress safety system simulator. The facilities are also used for research into marine safety, behavioral research and port development studies. In conjunction with industry, the Centre develops joint programs and seminars to disseminate information about operational innovations and new technologies.

THE SCHOOL OF OCEAN TECHNOLOGY

The School of Ocean Technology (SOT) is charged with the responsibility of developing and delivering education and training and applied research and development programs in various aspects of technology as it is both used and needed by primary ocean industries. The School's resources are committed to developing and delivering education and training programs to meet the needs of the ocean sector in Newfoundland and Labrador, and beyond.

The Programs offered by the School of Ocean Technology are as follows:

- Master of Technology Management
- Bachelor of Technology
- Joint Diploma of Technology/Bachelor of Technology in Ocean Instrumentation
- Joint Diploma of Technology/Bachelor of Technology in Underwater Vehicles

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- Joint Diploma of Technology/Bachelor of Technology in Ocean Mapping
- Technician Diploma in Remotely Operated Vehicles.

Centre for Applied Ocean Technology (CTec)

The Centre for Applied Ocean Technology (CTec), located at the Holyrood Marine Base, is the applied research arm of the School of Ocean Technology. Its primary goals are to:

- Undertake pre-commercial, applied research and development in response to the needs of the key ocean industries identified in the Marine Institute's Vision 20/20 plan.
- Where possible and practical, work corroboratively with the ocean technology community in Newfoundland and Labrador
- Provide work experience and employment opportunities for students and graduates of SOT programs

Activities within CTec are primarily focused in four key areas - ocean mapping, ocean observing systems, ocean instrumentation and underwater intervention.

DIVISION OF ACADEMIC AND STUDENT AFFAIRS

Academic and Student Affairs includes the Dr. C.R. Barrett Library, Student Affairs and teaching and learning services. The details of most of the services offered within the division are provided within the section of the calendar describing on-campus services.

The Dr. C. R. Barrett Library collection supports study and research in fisheries and aquaculture, marine technologies, nautical science, and the ocean environment. The collection also includes significant holdings in engineering.

The Office of the Registrar provides a variety of services to support the development of students at the Marine Institute, including program advising, admissions, and registration; grade handling and reporting; application of academic policies and regulations; maintenance of student records; and coordination of graduation and certification activities.

- *Admissions Office* works as a division of the Office of the Registrar to admit students to all Marine Institute administered programs. The admissions office acts as the institute liaison with Memorial's School of Graduate Studies and the provincial department of education.

Student Affairs provides a variety of services for both current and prospective students. The department includes student recruitment, placement, recreation and fitness, as well as a variety of student support services.

- *The Office of Student Recruitment* provides the link between the Marine Institute and prospective students, the office connects with key partners at the secondary, post-secondary and industry levels to ensure that a wide range of prospective students are knowledgeable about available programs. As well, the office coordinates the on-campus tour program and is actively involved in the transition of a prospective student to an applicant.

- *Placement Office* co-ordinates student work term employment in various programs offered by the Marine Institute.
- *Recreation and Wellness Office* is responsible for coordinating fitness, recreational and wellness activities for students and staff.
- *Student Support Services* These services include but are not limited to: coordinating various student orientations, accommodating students with disabilities, and assisting students address general academic and financial issues. This unit also provides referrals to specialized services available on-campus at the Marine Institute, St. John's main campus of Memorial University and in the community.

Teaching and Learning Services offer services in support of on-campus and online program and course development and redevelopment activities within each of the three schools of the Marine Institute.

CORPORATE SERVICES AND EXTERNAL AFFAIRS

The Division of Corporate Services and External Affairs provides organizational and business development services in support of the Marine Institute's Schools, Centers and Units. The division includes:

Finance and Contract Administration which provides financial and contract administration support for the Institute including, accounting and purchasing services.

Facilities and Technical Services which manages and maintains the Institute's facilities, provides transportation, mail, receiving and printing services, and oversees new construction.

Marine Services which manages and maintains the Institute's marine bases and operates the research and training vessels.

Human Resources which provides personnel and payroll services.

Auxiliary Services (Cafeteria/Conference Catering/ Bookstore) which provides meal services for students, caters to both meetings and conferences up to 250 delegates and operates the Institute's bookstore.

Marketing and Communications oversees the Institute's marketing, communications, conference planning, website management and publications such as The Bridge. They also provide expertise in graphic design, event management, promotional projects and web content development.

Information and Communication Technologies provides support in the development and delivery of learning opportunities through various learning technologies and also provides integrated support for the Marine Institute's net worked and administrative computer systems.

FISHERIES AND MARINE INSTITUTE OVERVIEW

INDUSTRIAL RESPONSE AND DEVELOPMENT

The Institute undertakes applied research and engages in technology transfer and training for our client industries through a number of specialized centres.

Centres

A number of centres operate within each of the three schools of the Marine Institute, namely the Offshore Safety and Survival Centre, the Centre for Marine Simulation, the Safety and Emergency Response Training Centre, the Centre for Sustainable Aquatic Resources, the Centre for Fisheries Ecosystems Research, the Centre for Aquaculture and Seafood Development and the Centre for Applied Ocean Technology. These are more fully described in the paragraphs under the headings for each of the three schools.

Affiliated Centre

Associated with the Marine Institute is an arms-length research and development organization.

Canadian Centre for Fisheries Innovation (CCFI)

The Canadian Centre for Fisheries Innovation (CCFI), founded in 1989, as a corporate joint initiative of the Marine Institute and Memorial University, provides scientific services to the aquaculture and fish harvesting and processing industries.

OFFICE OF THE VICE-PRESIDENT

The vice-president of Memorial University (Marine Institute) is primarily responsible for the operations of the Marine Institute. The vice-president of Memorial University (Marine Institute) reports directly to the president and works in close collaboration with the Marine Institute's Executive Committee, as well as the other vice-presidents and members of the senior management team of Memorial University. The Office of the Vice-President includes:

MI International

MI International is the focal point for international programs and activities of the Marine Institute. The unit brings an international dimension to the Institute, while enhancing the province's export capability, by participating in international development projects and establishing linkages with other institutions around the world.

Department of Development and Engagement

The Department of Development and Engagement is responsible for business development, major strategic projects, government relations, aboriginal affairs and related activities. In addition, the Department also oversees Regional Engagement, Alumni Affairs and Development.

Quality Office

The Marine Institute's Quality Office oversees the management of the Institute's quality system. The Institute's quality system has been registered to the ISO 9001:1994 standard since 2001, and since that time has maintained this standard. The Quality System has provided an umbrella under which all of the core processes, support processes and regulatory requirements as well as the accreditation agencies' requirements have been brought together.

FACILITIES

The Marine Institute's main campus is located in St. John's, within Pippy Park. It consists of classrooms and technical laboratories in support of its Programs, a flume tank, licensed seafood processing plant, simulation facilities and a freshwater aquaculture and research and development facilities.

The Institute's Offshore and Safety and Survival Centre is located in Foxtrap, located 30 km from the Institute's main campus. This training facility includes an international class marine firefighting unit, a survival tank with environmental simulation capabilities, a helicopter underwater escape trainer and simulated ship structure which provides a practical experience in controlling and extinguishing all types of shipboard fires.

The Institute operates a marine base at the Southside of St. John's harbor where its vessels are moored and serves as a base of operations for practical survival training.

The Institute's newest facility is the Holyrood Marine Base, located in Holyrood. The current facilities at the marine base is Phase I of a three phase development; the current facility houses the Centre for Applied Ocean Technology (CTec) classroom and office space; electrical and mechanical laboratories; a wet gear change, wash-down and drying area for diving and safety and survival operations; and equipment storage. Planning is underway for subsequent development of the Marine Base.

In addition to facilities in St. John's and surrounding area the Institute operates the Safety and Emergency Response Training (SERT) Centre located in Stephenville, which offers training courses in aviation, marine and industrial safety and emergency response.

DIARY FOR ACADEMIC YEAR 2014-2015

**Joint Diploma/Bachelor of Technology
Diploma of Technology
Technician Diploma
Post-Graduate Certificate
Advanced Diploma
Technical Certificates**

Students in Joint Diploma/Bachelor of Technology programs, or other students who are registered for undergraduate level courses as well as diploma level courses, please refer to the Memorial University academic diary for important dates and deadlines pertaining to the undergraduate level courses.

The Fisheries and Marine Institute of Memorial University of Newfoundland reserves the right to change the following dates:

FALL SEMESTER 2014

August 7, 2014, Thursday	Registration begins online (7:00 P.M.) - Fall Term for Joint Diploma/Bachelor of Technology, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate programs and Marine Engineering Work Term three (3). Registration will be ongoing until September 2, 2014 Students who have been accepted and conditionally accepted into programs requiring the submission of medicals will not be permitted to register for classes unless satisfactory copies of the required medicals have been received by the Registrar's Office.
August 11, 2014, Monday	Start date - bridge training for Advanced Standing Mechanical stream students in Term three (3), ROV/UV program
August 25, 2014, Monday	Registration deadline and fees payment deadline for Technical Certificates - Bridge Watch, and Marine Diesel Mechanics Late Registration fees will apply after this deadline
August 29, 2014, Friday	Registration deadline - Work Term three (3) Marine Engineering End date - bridge training for Advanced Standing Mechanical stream students in Term three (3), ROV/UV program
September 1, 2014, Monday	No Classes - Labour Day
September 2, 2014, Tuesday	Orientation Activities - First year Joint Diploma/Degree, Technology and Technician Diploma students Orientation Activities - Technical Certificates Bridge Watch and Marine Diesel Mechanics Registration Deadline - Fall Term for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate students Late registration fees will apply after this date.
September 3, 2014, Wednesday	Classes Start - Fall Semester for all Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate, and Technical Certificates - Bridge Watch and Marine Diesel Mechanics Safety training begins - Bridge Watch Technical Certificate Start date of Work Term three (3) - Marine Engineering
September 5, 2014, Friday	Last day to apply for Supplementary Exams for Technical Session & Summer Semester courses and Challenge Exams for Fall Semester
September 11, 2014, Thursday	Start date - Supplementary and Deferred Exams for Technical Session and Summer Semester courses and Challenge Exams for Fall Semester
September 12, 2014, Friday	End date - Supplementary and Deferred Exams for Technical Session and Summer semester courses and Challenge Exams for Fall Semester
September 17, 2014, Wednesday	Last date for students to add courses in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch Marine and Diesel Mechanics programs for Fall 2014 semester. Fees Payment Deadline - Fall Term Last day to opt out of health and/or dental insurance in the Fall semester

DIARY FOR ACADEMIC YEAR 2014-2015

September 17, 2014, Wednesday	Last date - students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate - Marine Diesel Mechanics to drop courses and receive a 100% refund of tuition fees and student union fees for the Fall, 2014 Semester. No Student Union fees will be refunded after this date
September 19, 2014, Friday	Last date - students in Joint Diploma/Degree, Diploma, and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs to apply for Fall scholarships
September 24, 2014, Wednesday	Last date - students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs to drop courses and receive 50% refund of tuition fees for Fall Semester
September 26, 2014, Friday	Last date to Apply for Credit Transfers and Examination Re-reads for the 2013/2014 Technical Session and Summer Semester
October 1, 2014, Wednesday	Last date - students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics to receive 25% refund of tuition fees for the Fall Semester. (No refunds will be granted to students in Fall Semester Programs after this date.)
October 13, 2014, Monday	No Classes - Thanksgiving Day, Fall Break Begins
October 15, 2014, Wednesday	Classes resume. Lectures will follow Monday's Schedule Last date - students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel (except for first time students in the first term of technology and technician diploma programs) to drop courses without academic prejudice.
October 16, 2014, Thursday	Classes will follow Tuesday's Schedule
October 29, 2014, Wednesday	Last date - first time students in the first term of Joint Diploma/Degree, Technology and Technician Diploma Programs, to drop courses without academic prejudice.
November 11, 2014, Tuesday	No Classes - Remembrance Day Holiday
November 14, 2014, Friday	Classes follow Tuesday's Schedule
November 19, 2014, Wednesday	Scholarship Presentations
December 1, 2014, Monday	Registration begins for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate, and Technical Certificate students registering in the Winter 2015 Semester
December 5, 2014, Friday	Classes end - Fall Semester for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs
December 8, 2014, Monday	Exams begin - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs
December 12, 2014, Friday	Exams end - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs End date - Marine Engineering Work Term three (3)

DIARY FOR ACADEMIC YEAR 2014-2015

WINTER SEMESTER 2015

January 2, 2015, Friday	Registration Deadline - Winter Term for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs Late Registration fees will apply after this date
January 5, 2015, Monday	Classes start - Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificates - Bridge Watch and Marine Diesel Mechanics programs Start date - Work Term two (2), Marine Engineering Last day to apply for Supplementary Exams for Fall Semester courses and Challenge Exams for Winter Semester
January 8, 2015, Thursday	Supplementary, Deferred and Challenge Exams Start
January 9, 2015, Friday	Supplementary, Deferred and Challenge Exams End
January 16, 2015, Friday	Last date - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs to add courses for the Winter Semester Fees Payment Deadline - Winter Term Last date to opt out of health/dental insurance in the Winter Semester Last date - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs to drop courses and receive 100% refund of tuition fees and student union fees for the Winter Semester No student union fees will be refunded after this date Last day to apply for Scholarships for Winter Semester
January 23, 2015, Friday	Last date - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs to drop courses and receive a 50% refund of tuition fees for Winter Semester Classes end - Bridge Watch Technical Certificate
January 30, 2015, Friday	Last date to apply for Examination Re-reads of Fall 2014 exams Last date to apply for Credit Transfer Last date - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs to drop courses and receive a 25% refund of tuition fees (No refunds will be granted to students in Winter Semester Programs after this date.)
February 2, 2015, Monday	Safety Training begins - Bridge Watch Technical Certificate
February 13, 2015, Friday	Last date - Students in Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate Marine Diesel Mechanics programs, (except for first time students in the First Term of Joint Diploma/Degree, Technology and Technician Diploma Programs) , to drop courses without academic prejudice
February 27, 2015, Friday	Last date - first time students in the first term of Joint Diploma/Degree, Technology and Technician diploma programs, to drop courses without academic prejudice. Safety Training ends - Bridge Watch Technical Certificate
March 2, 2015, Monday	Work Term begins - Bridge Watch Technical Certificate
March 13, 2015, Friday	Last day to apply for Graduation in June, 2015
March 16, 2015, Monday	No Classes - Mid-March Holiday (St. Patrick's Day)

DIARY FOR ACADEMIC YEAR 2014-2015

March 17, 2015, Tuesday	Classes follow Monday's schedule
March 19, 2015, Thursday	Scholarship Presentations
April 1, 2015, Wednesday	Registration period begins for Joint Diploma/Degree, Diploma, Advanced Diploma, and Technical Certificate Marine Diesel Mechanics students registering in Technical Session, Summer Semester, Safety Training and Work Terms
April 3, 2015, Friday	No Classes - Good Friday
April 6, 2014, Monday	No Classes - Easter Holiday
April 8, 2015, Wednesday	Classes Follow Friday's Schedule Classes end - Winter Semester for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate programs
April 13, 2015, Monday	Exams begin - Winter term for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate programs
April 17, 2015, Friday	Exams end - Winter term for Joint Diploma/Degree, Diploma, Advanced Diploma, Post-Graduate Certificate and Technical Certificate programs Registration deadline - Technical Session, Summer Semester and Safety Training for Joint Diploma/Degree, Diploma, Advanced Diploma and Technical Certificate Marine Diesel Mechanics programs Registration deadline - Work Terms for Diplomas, Advanced Diplomas and Technical Certificate programs Late Registration fees apply after this deadline End date - Work Term two (2) - Marine Engineering Last date to add courses fro Technical Sessions

TECHNICAL SESSION AND SUMMER SEMESTER 2015

Please refer to the Student Fees Refund Policy in the Fees and Financial Information Section of the Marine Institute Academic Calendar, for the drop/refund deadlines for Technical Session courses relative to the various dates for Technical Sessions.

April 20, 2015, Monday	Start date - Technical Session three (3) Nautical Science Start date - Safety Training for Marine Diesel Mechanics Start date - FDTE 2118 (Canned Foods and Thermal Processing) - Advanced Diploma in Food Safety and Joint Diploma/Degree (Food Technology) Start date - AQUA 4114 (Ropework and Net Mending), SFTY 2102 (MED A3), SFTY 1101 (Standard First Aid) and Boat Handling - Advanced Diploma in Sustainable Aquaculture program
April 23, 2015, Thursday	End date - FDTE 2118 (Canned Foods and Thermal Processing) - Advanced Diploma in Food Safety and Joint Diploma/Degree (Food Technology) End of Winter Semester - Advanced Diploma in Food Safety
April 27, 2015, Monday	Start Date - Work Term two (2) for Marine Environmental Start Date - Work Terms one (1) - Joint Diploma/Degree Food Technology
April 28, 2015, Tuesday	Start date of Technical Session for students in Joint Diploma/Degree, Diploma Programs (other than those which started April 20th) and the Advanced Diplomas in Water Quality and Integrated Coastal and Ocean Management Start date - Summer Term - Marine Engineering, Term six (6); Start date - Safety Training for Advanced Marine Engineering Start date - FDTE 3102, FDTE 3104, FDTE 3118 - Joint Diploma/ Degree (Food Technology)
April 29, 2015, Wednesday	Last date to apply for Supplementary and Deferred Exams for Winter Semester courses and Challenge Exams for Technical Session
May 4, 2015, Monday	Start of Work Term - Advanced Diploma in Food Safety
May 5, 2015, Tuesday	End date - AQUA 4114 (Ropework and Net Mending), SFTY 2102 (MED A3), SFTY 1101 (Standard First Aid) and Boat Handling - Advanced Diploma in Sustainable Aquaculture program End of Winter Semester - Advanced Diploma in sustainable Aquaculture

DIARY FOR ACADEMIC YEAR 2014-2015

May 7 2015, Thursday	Supplementary, Deferred and Challenge Examinations begin End date - FDTE 3102, FDTE 3104, FDTE 3118 - Joint Diploma/ Degree (Food Technology) End of Technical Session 1 - Joint Diploma/ Degree (Food Technology)
May 8, 2015, Friday	End Date - Work Term - Bridge Watch Technical Certificate Supplementary, Deferred and Challenge Examinations end
May 12, 2015, Tuesday	Last date to add courses for Summer Term - Marine Engineering, Term six (6) Last date - students in Diploma programs to drop courses and receive a 100% refund of tuition fees and student union fees for the Summer 2015 Semester. No student union fees will be refunded after this date
May 18, 2015, Monday	No Classes - Commonwealth Day
May 19, 2015, Tuesday	Start Date - Work Term two (2) - Joint Diploma/Degree (Food Technology); Advanced Diploma in Sustainable Aquaculture Last date - students in Diploma programs to drop courses and receive a 50% refund of tuition fees the Summer 2015 Semester
May 21, 2015, Thursday	Classes Follow Monday's Schedule
May 26, 2015, Tuesday	Last date to apply for Credit Transfer Last date to apply for Examination Re-reads of Winter 2015 exams Last day - students in Diploma programs to drop courses and receive a 25% refund of tuition fees for the Summer 2014 Semester. (No refunds will be granted to students in Summer Semester Programs after this date)
May 29, 2015, Friday	End date - Technical Sessions one (1), two (2) and three (3) - Naval Architecture End date - Technical Sessions one (1), two (2) and three (3) - Marine Engineering Systems Design End date - Technical Session one (1), two (2) and three (3) - Ocean Instrumentation End date - Technical Session one (1), two (2) and three (3) - Ocean Mapping End date - Technical Session one (1) - ROV/UV End date - Safety Training for Advanced Marine Engineering
June 2, 2015, Tuesday	End date - Technical Session two (2) - Marine Environmental Technology
June 5, 2015, Friday	End Date - Technical Session two (2) ROV/UV programs End date - Technical Session Advanced Diploma in Water Quality and Advanced Diploma in Integrated Coastal and Ocean Management End date - Work Term two (2) - Marine Environmental Technology Safety Training Ends - Marine Diesel Mechanics
June 8, 2015, Monday	Start date - Work Term - Ocean Instrumentation and Ocean Mapping programs
June 9, 2015, Tuesday	Last date - students in Diploma Programs to drop courses in the Summer Semester without academic prejudice
June 12, 2015, Friday	End date - Technical Session three (3) - Nautical Science
June 15, 2015, Monday	Start date - Work Term - Technical Certificate Marine Diesel Mechanics Start date - Work Term - ROV/UV Start date - Work Term - Advanced Diploma in Water Quality and Advanced Diploma in Integrated Coastal and Ocean Management and Marine Environmental (Work Term 1)
June 16, 2015, Tuesday	End date - Technical Session one (1) - Marine Environmental Technology
June 19, 2015, Friday	End date - Technical Session one (1) and two (2) - Nautical Science End date - Technical Session one (1) and two (2) - Marine Engineering Technology
June 19, 2015, Friday	Graduation

DIARY FOR ACADEMIC YEAR 2014-2015

June 22, 2015, Monday	No Classes - Discovery Day
June 25, 2015, Thursday	Start date - Sea Phase one (1) and two (2) - Nautical Science Start date - Work Term one (1) - Marine Engineering Technology
June 26, 2015, Friday	Classes follow Monday's schedule
July 1, 2015, Wednesday	No Classes - Memorial Day/Canada Day Holiday
July 13, 2015, Monday	No Classes - Mid-July Holiday (tentative)
July 14, 2015, Tuesday	Classes follow Monday's schedule
July 31, 2015, Friday	Classes end Summer Semester Marine Engineering Term six (6),
August 3, 2015, Monday	Exams Begin - Marine Engineering Term six (6)
August 5, 2015, Wednesday	No Classes - Regatta (Civic) Day
August 7, 2015, Friday	Exams End - Marine Engineering Term six (6)
August 10, 2015, Monday	Safety courses begin - Marine Engineering Term six (6)
August 28, 2015, Friday	End date - Nautical Science Sea Phase one (1); Nautical Science Sea Phase two (2); End date Marine Engineering Work Term one (1); End date - Marine Environmental Work Term one (1); End date - Joint Diploma/Bachelor of Food Technology Work Terms one (1) and two (2); End date - Work Terms for Advanced Diplomas in Food Safety and Sustainable Aquaculture End date - Work Terms for ROV/UV, Ocean Instrumentation and Ocean Mapping programs End date - Marine Engineering Term Six (6) End date - Work Term for Marine Diesel Mechanics
September 25, 2015, Friday	End date - Advanced Diploma in Water Quality and Advanced Diploma in Integrated Coastal and Ocean Management Work Terms

IMPORTANT NOTE:

Because of sailing and company schedules and work term availability the dates for Work Terms must be flexible and may not always begin and end on the dates specified in this Diary.

MARINE INSTITUTE GOVERNANCE

MARINE INSTITUTE INDUSTRY ADVISORY COMMITTEE

An Industry-based Advisory Committee, established by an Act of Legislature, with members appointed by the Board of Regents of the University, advises the Marine Institute on fisheries and marine related programs and activities.

Captain Sidney Hynes (Chair)
Oceanex Inc.
Executive Chairman
87 Water Street
P.O. Box 5097
St. John's, NL, A1C 5V3

Ms. Margaret Allan (Vice-Chair)
Manager, Regulatory Affairs and Administration
Husky Energy
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235 Water Street
St. John's, NL, A1C 1B5

Mr. Glenn Blackwood
Vice-President of Memorial University (Marine Institute)
Fisheries and Marine Institute of Memorial University
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St. John's, NL, A1C 5R3

Mr. David Lewis
Deputy Minister
Department of Fisheries and Aquaculture
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St. John's, NL, A1C 5T7

Mr. William Glatt
President, MISU
Marine Institute

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President
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Mr. Ross Butler
Vice-President, Plant Operations
Cooke Aquaculture
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Blacks Harbour, NB, E5H 1E6

Mr. Mark Dolomont
Executive Director
Professional Fish Harvesters Certification Board
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CEO
Ocean Choice International L.P.
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Mr. Paul Griffin
President and CEO
Marine Atlantic
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Baine Johnson Centre
St. John's, NL, A1C 1K4

Mr. Tim Lawrence
General Manager
Oceaneering Canada Limited
23 Dundee Avenue
Mount Pearl, NL, A1N 4R6

Ms. Kim Keating
Director of Projects
GJ Cahill & Company Limited
The Tower Corporate Campus
PO Box 1674
240 Waterford Bridge Road
St. John's NL A1C 5P5

MARINE INSTITUTE EXECUTIVE COMMITTEE

Blackwood, G., B.Sc (HONS), M.A. *Memorial*
Shea, R. J., B. A., B.S.W., M.Ed. *Memorial*, Ph. D *Calgary*

Clarke, K., B.Sc., M.B.A. *Memorial*
Newhook, R.V., B.Eng. *Memorial*, P.Eng
Bonnell, C., A.D.F.D. *Marine Institute*, B.Sc., M.M.S *Memorial*
Dutton, C. R., B.Eng., B.Voc. Ed., M.Eng. *Memorial*
Howse, D., M.B.A. *Memorial*, M.Eng. *Memorial*, B.Eng. *Memorial*

Vice-President of Memorial University (Marine Institute)
Associate Vice-President (Marine Institute) Academic and Student Affairs
Director, Corporate Services and External Affairs
Director, Research and Development
Head, School of Fisheries
Head, School of Maritime Studies
Head, School of Ocean Technology

ACADEMIC COUNCIL 2014 - 2015

Chair Academic Council

Blackwood, G., B.Sc (HONS), M.A. *Memorial*

Vice-Chair, Academic Council

Fleet, B.A, Dip. Nursing *SJGH*, B.Voc.Ed., M.Ed. *Memorial*

Secretary to Academic Council

Noftall, L.B. Comm.(Co-op) *Memorial*

DIVISION OF ACADEMIC AND STUDENT AFFAIRS

Shea, R., B.A., B.S.W., M.Ed. *Memorial*, Ed. D., *Calgary*,
Associate Vice-President (Marine Institute) Academic and Student Affairs

Breen, C.A., B.Sc., M.Ed. *Memorial*

Fleet, B.A, Dip. Nursing *SJGH*, B.Voc.Ed., M.Ed. *Memorial*

Howse, D.M., B.Sc., B.Ed., M.Ed. *Memorial*

Janes, H., B.A., B.Ed., M.Ed. *Memorial*

Lawton, C., B.N., M.L.S. *Dalhousie*

Molloy, C., B.A. *Memorial*, M. Distance Ed. *Athabasca*

Walsh, C., B.Sc., B.Ed. *Memorial*, M.Ed. *U.B.C.*

SCHOOL OF FISHERIES

Bonnell, C., A.D.F.D. *Marine Institute*, B.Sc., M.M.S. *Memorial*

Bath, R., B.M.S. M.M.S. *Memorial*, F.M.1

Blundon, J., B.Sc., B.Ed. *Memorial*, Grad.DiP.Tech. *Marine Institute* M.M.S. *Memorial*

Bonnell, L., B.Sc., B. Ed., M.Sc. *Memorial*

Coughlan, G., BPE *Memorial*, MEDes (Environmental Science) *University of Calgary*

Couturier, C.F., B.Sc. *New Brunswick*, M.Sc. *Dalhousie*

Durnford, E., Dip.Tech. *Marine Institute*, B.Sc., B.Ed., M.Sc. *Memorial*

Dwyer, C., Dip. of Food Technology. *Marine Institute*

Fortune, S., B.Sc., B.Ed. (Post Secondary), *Memorial*, Adv. Dip. Food Safety, *Marine Institute*,

Gibbons, R.C., B.A., M.M.S. *Memorial*, F.M.1

Grant, S., B.Sc. Wilfred Laurier, M.Sc. *Trent*, Ph.D. *Memorial*

Greenham, J., FMI, Master Near Coastal, Dip. Nautical Science *Marine Institute*, B.M.S. *Memorial*

Harnum, G., Dip. Tech. *Marine Institute*, B.Tech. *Memorial*, Post Grad. Cert. (Post-Secondary) *Memorial*, Grad. Cert. (Int. Food Law & Regs), M.Sc. (Food Safety) *Michigan State*

Hayter, R., Dip.Tech. *College of Fisheries*, B. Tech., *Memorial*

Kennedy, E., Dip.Tech. *College of Fisheries*, B.Tech. *Memorial*

Mercer, K.B., B.Sc. *Dalhousie*, Adv. Dip. *Marine Institute*

Milley, N., B.A., B.Ed., M.M.S. *Memorial*

Morris, P., F.M.1

Nichols, J. B.Sc. *Memorial*, Adv. Dip. Aquaculture. *Marine Institute*

Onodenalore, C., B.Sc., M.Sc. *University of Benin*, B.Ed., M.Sc., Ph.D. *Memorial*

Perry, J., B.Sc. (Nutrition), B.Ed. (Post-Secondary) *Memorial*, Adv. Dip. Food Safety *Marine Institute*

Perry, R.A., B.A. (Ed.), B.A., M.A., M.B.A. *Memorial*

Pippy, M.C., B.Sc., B.Ed, M.A.Sc. *Memorial*

Pittman, R., M.C.P.M. *York*, O.N.2, F.M.1

Pretty, R., B.Sc., B.Ed. (Post-Secondary) *Memorial*, Adv. Dip. Food Safety *Marine Institute*

Rideout, K., B.Sc., *Memorial*, Graduate Diploma *Marine Institute*, M.M.S. *Memorial*

Robertson, K., B.Sc., Adv. Dip., B.Ed., M.A.Sc. *Memorial*, Cert. Env. Mgmt. *U of T*

Samson, L., Dip. Food Technology *Marine Institute*,

Singleton, J., B.Eng. *Memorial*, P. Eng.

Strickland, J. Dip.Tech. *Marine Institute*, B.Sc., M.B.A., *Memorial*

Trenholm, R., Dip. Ag. Eng. *NSAC*, B.Eng. *Tuns*, M.Sc. *Memorial*

Wescott, J.D., B.Sc. *Memorial*, B.Sc. (Agriculture) *Dalhousie/NSAC*, Ph.D. *UPEI*, M.B.A. *UPEI*

Whiteway, G., Dip.Tech. *College of Fisheries*, B.Sc. B.Voc.Ed., M.Sc. (Instrumental Analysis) *Memorial*

SCHOOL OF MARITIME STUDIES

Dutton, C. R., B.Eng., B.Voc.Ed., M. Eng. *Memorial*, (School Head)

Anastasiadi, A., Dip.Eng. *Batumi Marine College*, *USSR*, Marine Engineer (2nd Class)

MARINE INSTITUTE GOVERNANCE

ACADEMIC COUNCIL 2014 - 2015 cont.....

Antony, J., BTEC Higher National Diploma in Nautical Science *Blackpool & Fylde College (UK)*, Master Mariner Unlimited *Maritime and Coastguard Agency (UK)*, Post Graduate Diploma in Logistics and Shipping *Indian Institute of Logistics (India)*

Azizan, H., Dip.Tech. *College of Fisheries*, B.Voc.Ed., M.Ed., M.M.S. *Memorial*, M.M.M. *Dalhousie*, M.Sc. *Plymouth*, Master Mariner

Bae, C., B.Eng., M.Eng., *Inha University*

Baker, K., Dip.Tech. *College of Fisheries*, Cert. Post-Secondary Ed. *Memorial*

Brake, D. J., B.Sc., B.Ed., B.A., M.Ed. *Memorial*

Brown, H., Journeyman Welder Certificate with Interprovincial Red Seal *College of Trades and Technology*

Budgell, D., B.Sc., B.A., B.Ed., M.Ed. (Post Secondary), M.Ed. (Guidance) *Memorial*

Callahan, C., B.Sc., B.Ed. *Memorial*

Clouter, E., B.A., B.Ed. *Memorial*, M.Ed. *Minnesota*

Courage, A., B.Eng., M.A.Sc., Cert. Post Secondary Ed. *Memorial*, P.Eng.

Cross, J., ONII, Dip. Tech. (Navigation) *Georgian College*, B.Sc. *Queens*, M.Eng. *Memorial*, P.Eng.

Curtis, S.L., Dip.Tech. *Marine Institute*, Dip. Voc. Ed. B. Tech. *Memorial*

Ennis, J., Dip. Tech. *College of Fisheries*, Master Mariner, Cert. Post Secondary Ed. *Memorial*

Francis, D., Marine Engineer (1st Class), Dip. Ed. (PS.) *Memorial*, Dip. Marine Surveying *Lloyds Maritime Academy*, BMS *Memorial*, B. Ed. (PS.) *Memorial*, MMM *Memorial*

Hanlon, C.R., Dip. Tech. Marine Engineering *Marine Institute*, Marine Engineer (2nd Class Motor), Cert. Post-Secondary Education, *Memorial*

Hargreaves, B., Fishing Master I and Master Mariner, Cert. Post Secondary Ed., *Memorial*

Hopkins, C., B.M.S. *Memorial*, Dip.Tech. (Nautical Science) *Marine Institute*, Master 500 GT, First Mate Intermediate Voyage, NFPA 1001 Fire Fighter 2, ISO-FDSOA Pro Board

Kalra, C.S., Master Mariner, *M.C.S.E.*, Cert. Post Secondary Education, *Memorial*, MBA (Shipping and Logistics) *Tamilnadu University*, India

Kavanagh, T., Dip.Tech. *Marine Institute*, Marine Engineer, (3rd Class Motor, 4th Class Steam, 4th Class Power)

Lambert, F., Dip. Tech *Marine Institute*, Master Mariner, Cert. Post Secondary Education, B.Ed.(Post Secondary) *Memorial*

Marshall, M., B.Eng., M.Eng., Ph.D. *Memorial*, P.Eng.

Martin, P., Master Mariner, Cert. Post-Secondary Education, *Memorial*

McCulloch, C., BA (St Francis Xavier University), MA, DPW and Cert. Post-Secondary Education, *Memorial*

Meadus, F., CD, Communications Specialist, Dip. Post. Secondary Ed. *Memorial*, Cert. Occupational Health & Safety *College of the North Atlantic*

Mercer, R., B.Voc. Ed., M.Ed., *Memorial*, Master Mariner (Assistant Head)

Noseworthy, D., Red Seal Certification (Machinist & Millwright)

O'Brien, I., Dip. Tech. *Marine Institute*

O'Keefe, T., Dip.Tech. *Marine Institute*, B.Tech., B.Ed. (Post Secondary) , M.Ed. (Educational Leadership) *Memorial*, PE^{4th}

Parsons, J.R., Dip.Tech. *College of Fisheries*, Master Mariner, B.M.S., Cert. Business Administration, B.Ed. *Memorial*, M.Sc. *Maine Maritime*, FCIP., CRM. *University of Toronto/Insurance Institute of Canada*, PhD. *University of Plymouth*, MCPM *Memorial*

Peach, A., B.A. (Honours) *Memorial*, M.A. *Toronto*

Pelley, J., B.Sc., B.Ed. *Memorial*

Pond, J., B.Eng., B.Ed. (Post Secondary) *Memorial*

Pynn, W., Dip.Tech. *Marine Institute*, M.B.A. *University of Warwick*

Ryan, J. C., B.P.E., B.Ed., B.Sc., B.A. *Memorial*

Short, C., Master Mariner

St. Croix, J., B.A., B.Ed., M.Ed., M.A. *Memorial*

Stone, B., B.Eng., M.Eng., M.B.A. *Memorial*

Strowbridge, K., Dip. Tech. NARC and MESD *Marine Institute*, Cert. Post Secondary Education, *Memorial*

Tucker, J., B.Eng., M.Eng. *Memorial*, P.Eng, Recipient of The President's Award for Distinguished Teaching, *Memorial* (2012)

Wareham, M., Dip.Tech. (MESD), Dip.Tech. (NA) *Marine Institute*, B.Eng. *Memorial*

White, A., Dip.Tech. *College of Fisheries*, Marine Engineer (1st Class Motor, 4th Class Steam), B.Tech., BMS, B.Ed. (Post Secondary) *Memorial*

Williams, G., Dip. Tech, *College of Fisheries*, Master Mariner

Woolridge, D., B.Sc., B.Ed., M.Ed. *Memorial*

CMS

Hearn, C., Dip N. Sci., Marine Institute, Master Mariner, (Director)

Dubuc, S., B.A. (Honours) *Guelph*, Dip N. Sci. *Marine Institute*, / Cert. Post Secondary Education *Memorial*, Master Mariner

Fiander, G. R., Dip.Tech. *Marine Institute*, O.N.1

Kennedy, J., Master Mariner, Cert. Post Secondary Education, *Memorial*

March, E., Dip N. Sci. *Marine Institute*, Master Mariner

Mueller, U., Master Mariner

SERT Centre

Alexander, J., (Troy), NFPA 1001 Level I & II, NFPA 1003, NFPA 1041 Level I & II, NFPA 1006

ACADEMIC COUNCIL 2014 - 2015 cont.....

Doyle, T., NFPA 472, NFPA 1001 Level I & II, NFPA 1002 (Pumper Level & Aerial Device), NFPA 1003, NFPA 1041 I & II, , NFPA 1006 Technical Rescuer –Rope Rescue Level II; Confined Space Rescue Level II; Vehicle Machinery Recue Level II

Fewer, J., Restricted Watchkeeping Mate, FM III, Marine Diesel Mechanic, NFPA 472, NFPA 1001 Level I & II, NFPA 1041 Level I & II, Post-Secondary Instructors Certificate

Gallant, T., NFPA 472, NFPA 1001 Level I-III, NFPA 1002, NFPA 1003, NFPA 1041 Level I & II, NFPA 1006, NFPA 472 Incident Command, Blue Card Instructor, Post-Secondary Instructor Certificate

Goulding-Harnum, S., B.Ed. (Post Secondary), NFPA 472, NFPA 1001 Level I & II, NFPA 1041 Level I & II & III, NFPA 1021 Level 1-4, AMFR Level II (80 Hours) Instructor

O’Quinn, B., NFPA 472, NFPA 1001 Level I & II, NFPA 1002, NFPA 1003, NFPA 1041, NFPA 1006 Confined Space Entry, Rope Rescue, Vehicle & Machinery Extrication Level I & II, WHSCC Fall Protection Instructor, WHSCC Confined Space Entry Instructor

Piercey, H., NFPA 472, NFPA 1001 Level I & II, NFPA 1002, NFPA 1041 Level I & II, NFPA 1021 Level 1-4, NFPA 1006, NFPA 1002 Aerial Operator

Stapleton, G., NFPA 472, NFPA 1001 Level I/II/III, NFPA 1002, NFPA 1003, NFPA 1041 Level I & II & III

OSSC

Anstey, F.A., B.A., B.Voc.Ed., M.Ed., Cert.Bus.Adm. *Memorial*, O.N.1 (Director)

Barron, R., Dip. Tech. Nautical Science, *Marine Institute*, Watchkeeping Mate

Blackmore, D.T., F.M.1, B.Voc.Ed. *Memorial*

Brazil, D., Dip.Tech. *Marine Institute*, Master Mariner

Butler, K., B.Sc., B.A., B.Ed., Dip. Adult Ed., M.Ed. *Memorial*

Clarke, C., Dip.Tech. *Marine Institute*, O.N.1

Dohey, P., B.Ed. (Post Secondary) *Memorial*, M.Sc. (RCDM) *University of Leicester*, Dip. Voc. Ed. *Memorial*, NFPA 1021, NFPA 1041, NFPA 1031

Donnelly, D., Master Mariner

Drake, S., Master Mariner, Cert. Post-Secondary Education, *Memorial*

Dunphy, L., CD2, Cert.Adv. Instructor Methodology *St. Mary’s*

Dwyer, D., Diploma of Nautical Science, O.N.1

Harvey, G.

Kearney, G., Dip.Tech. *Marine Institute*, Dynamic Positioning Certificate *Nautical Institute*, Master Mariner, Cert. Post-Secondary Education *Memorial*

Lacour, D., B.Comm. *Memorial*, N.F.P.A Level 2 Firefighting Cert. *University of Oklahoma*, Paramedic I

Norris, M. Dip. Tech. Marine Engineering, *Marine Institute*, Third Class Engineer

Oliver, J. Dip Post-Secondary Education, Primary Care Paramedic, Emergency Medical Responder Instructor Trainer

Shanahan, J., Dip.Voc.Ed. *Memorial*, Marine Engineer (4th class), Millwright (Indust.Mech.) Interprovincial Cert.

Small, G., B.Sc., B.Ed. Cert. Voc. Ed. *Memorial*, FM

Snow, R., N.F.P.A., Level 3 Firefighting Cert., *University of Oklahoma*

Turpin, D., Marine Engineer (2nd Class Steam), Power Engineer (4th Class)

Webber, K. Heavy Oil Operations Technician Certificate, 4th Class Power Engineer, Gas Processing Operations, *Lakeland College*

SCHOOL OF OCEAN TECHNOLOGY

Howse, D., Dip. Post-Secondary Education, B.Eng., M.Eng., M.B.A. *Memorial*, P.Eng. (School Head)

Barajas M, B. Sc., M.Sc.,Ph.D., *Polytechnique Montreal*

Batten, C., Dip Electronics Tech, *College of the North Atlantic*

Bishop, G., M. Env. Sci., *Memorial*, Dip. Tech (Marine Environmental) *Marine Institute*, B.Tech, *Marine Institute*, M.Env. Sci. *Memorial*

Brett, P., B.Sc. (Hons), B.Ed. (Post Secondary), M.Sc. *Memorial*

Cartwright, D., M. Eng. *UNB*

Chaulk, C., B.Eng. *Memorial*, B.Ed. *Memorial*, M.Ed. *Memorial*

Coronado, C., B.Sc., M.Sc. (ENG) *Chalmers University of Technology-Sweden*, LL.M (IP) *University of Turin-Italy*, Ph.D., *Ecole Polytechnique de Montreal*

Elliott, P., B.Sc. B.Ed. Dip.Tech.Ed. *Memorial*, M.Ed. (IT) *Memorial*, *Cape Breton University*, Dip. GIS *Nortech College*

Halfyard, P., Cert.Tech. *College of Fisheries*, Cert.Tech. *Marine Institute*

Haynes, D. B.Eng., *Memorial*, P.Eng., Diploma of Technology, *College of Trades and Technology*, Dip. Post-Secondary Education

Jewer, J., B.Comm. (Co-op) (Hons.) *Memorial*, M.A.Sc, Ph.D. *University of Waterloo*

Keats, C., Dip.Tech.(Marine Environmental) *Marine Institute*, B.Tech. *Memorial*, M.Env.Sci. *Memorial*

Matchem, J., B.Eng., B.Ed. (Post Secondary) *Memorial*

Matchim, R., B.Eng. *Memorial*

Piercey, V. B.Eng. *Memorial*, P.Eng.

Ragunathan, J., B.Eng. *Madurai Kamaraj University, India*, M.Eng.

Roche, R., B.Eng. *Memorial*

Roy, A., CEGEP Diploma (Surveying), *Limoilou College*, MSc. *Memorial*

Ryan, P., A., Dip Tech C.M.R, B. Eng R.M.C, B. Ed *Memorial*, MEM *Memorial*, P.Eng., CD.

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Smith, W., Interprovincial Journeyman (Industrial Electrical and Instrumentation Controls), Diploma Electronics Technology (CET) *College of Fisheries*, B.Tech. *Memorial*, B.Ed. (Post-Secondary) *Memorial*

St. Hilaire, D., B.Sc. Laval University, Ph.D *Memorial*

VanderVoort, R., B.Sc. (Applied Physics) *University of Windsor*

Venkatraman, S., B.Eng. *Bharathidasan University, India*, M.Eng. *SASTRA University, India*, B.Ed *Memorial*

Way, B., B.Eng., M.B.A., M.Ed. *Memorial*, P.Eng.

White, C., B. Eng. *QUT Australia*, MSc., (Eng) *Cranfield University United Kingdom*, MSc. (Information Systems), *UNSW, CPEng Australia*

Wu, L., M.Eng. *Memorial*, B.Eng. *Northwestern Polytechnical University - China*



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1. APPLICATION FOR ADMISSION

1.1 Non-Degree Programs

A Marine Institute Application for Admission is required for all Marine Institute non-degree programs. An application fee of \$50 (plus an additional \$50 fee for international applicants and applicants transferring from post-secondary institutions outside of Newfoundland and Labrador), must accompany each application. The documents required for determination of eligibility for admission to each Marine Institute program are listed in the appropriate area of the Marine Institute Application for Admission, as well as in the Admission Requirements section of this calendar. An application is considered to be complete only upon receipt of all required documents and application fees.

Note:

Transcripts must be submitted by the issuing institution directly to the following address:

**Registrar's Office
Marine Institute
P.O.Box 4920
155 Ridge Road
St. John's, NL
A1C 5R3**

Copies submitted by applicants will not be considered official documents.

The application deadline for Fall term admission is April 15th for Canadian applicants and April 1st for International applicants.

Applications received after deadlines will be considered on an individual basis up to the beginning of each semester or program however, early application is recommended as limited resources and facilities may limit enrolment.

Applicants should note that all documents (including transcripts) used for admission purposes become the property of the Marine Institute and are not returned to the applicant. Documents submitted by applicants who are not accepted, or who do not attend, are retained for one year after which time they are destroyed.

The Marine Institute reserves the right to refuse admission to any applicant. Application or admission enquiries should be directed to:

**Admissions Officer
Office of the Registrar
Fisheries and Marine Institute of
Memorial University
P.O. Box 4920
155 Ridge Road
St. John's, NL
A1C 5R3**
**Telephone: (709) 778-0380 or
1-800-563-5799
Fax: (709) 778-0322
Internet: admissions@mi.mun.ca**

1.2 Bachelor Degree Programs

Applicants seeking admission or re-admission to the Bachelor of Maritime Studies or Bachelor of Technology programs of the Fisheries and Marine Institute of Memorial University of Newfoundland are required to apply for admission to Memorial University of Newfoundland. Applicants should consult the Memorial University Calendar and refer to the Regulations Governing Admission/Readmission to Memorial University as well as to the Fisheries and Marine Institute section of the Memorial University Calendar for the regulations governing each program.

If the applicant has attended Memorial University or the Marine Institute during any of the previous three semesters, a General Memorial University Application for Admission is not required. Students who are currently attending post-secondary institutions other than the Marine Institute or Memorial University are required to supply official transcripts. Transcripts should be submitted by the appropriate institution directly to the following address:

**Registrar's Office
Memorial University of Newfoundland
St. John's, NL
A1C 5S7**

1.3 Master's Degree Programs

Applicants for the Master in Marine Studies (Fisheries Resource Management), Master of Maritime Management (MMM) and Master of Technology Management (MTM) programs must apply for admission through Memorial University's School of Graduate Studies. Information concerning application procedures can be obtained from the Memorial University Calendar.

Inquiries concerning the degree programs listed above may be directed to:

**Coordinator of Advanced Programs
Office of the Registrar
Fisheries and Marine Institute of
Memorial University
P.O. Box 4920
155 Ridge Road
St. John's, NL
A1C 5R3**

**Telephone: (709) 778-0682 or
1-800-563-5799
Fax: (709) 778-0322
E-Mail: cap@mi.mun.ca**

Note:

Transcripts submitted directed by applicants to the Office of the Registrar will not be accepted.

ADMISSION TO THE MARINE INSTITUTE

2. ADMISSION REQUIREMENTS

The regulations governing admission to Marine Institute programs are provided below. Applicants are advised to review the regulations for specific programs to ensure they are familiar with any additional requirements which may be in place for determining eligibility for admission.

2.1 Physical Requirements

Applicants seeking entry to Marine Institute programs which lead to Transport Canada Certification for Seafarers should note that Transport Canada requires proof of satisfactory physical fitness prior to sitting for any Transport Canada exams. This includes satisfactory visual acuity, colour vision, and hearing among other physical requirements.

Applicants to selected Marine Institute programs are required to provide proof of physical fitness prior to enrolment. This proof is required for participation in simulated emergency situations and is also required for Transport Canada certification.

The three medicals involved are known as the Marine Institute (*MI*) Medical, Transport Canada (*TC*) Marine Medical Certificate and the Canadian Association of Petroleum Producers (*CAPP*) Offshore Medical. Students enrolled in programs which lead to seagoing careers will need to submit the appropriate medicals. Students in programs which involve emergency training but do not lead to Transport Canada certification, require only the MI medical.

2.2 Programs Requiring Proof of Fitness

2.2.1 Joint Degree/Diploma Programs

- **Diploma of Technology/Bachelor of Technology Ocean Mapping (TC Medical)**
- **Diploma of Technology/Bachelor of Technology (Underwater Vehicles) (CAPP Medical)**

2.2.2 Diploma Programs:

- **Marine Engineering (TC Medical)**
- **Marine Environmental (TC Medical)**
- **Nautical Science (TC Medical)**
- **Remotely Operated Vehicles (ROV) Operator (CAPP Medical)**

2.2.3 Technical Certificate Programs:

- **Bridge Watch Program (TC Medical)**
- **Fire Rescue (MI Medical)**
- **Harvesting (TC medical)**
- **Marine Diesel Mechanics (TC Medical)**
- **Marine Engineering (TC Medical)**

Proof of physical fitness must be provided by way of a signed medical from an approved physician. Only physicians who are authorized by the Marine Institute and Transport Canada may perform the relevant medicals. Details of the physical requirements for the TC marine medical certificate may be obtained from the Marine Institute Library or Transport Canada at the following address:

Marine Safety Directorate
John Cabot Building, 10 Barter's Hill
P.O. Box 1300, St. John's, NL A1C 6H8
(709) 772 - 5167

To obtain a list of physicians designated to perform the Seafarers' Medical in your area please visit the Transport Canada website at:

<http://wwwapps.tc.gc.ca/saf-sec-sur/4/mme-mdm/>

The list of physicians designated to perform the MI Medical can be found on the web at:

<http://www.mi.mun.ca/medical>

The medical assessment guidelines for fitness to work offshore can be found at:

<http://www.capp.ca/library/publications/atlanticcanada>

2.3 Criminal Record Check

Applicants to the Marine Institute are advised that employers may require a criminal record check as part of the recruitment and selection process for work term placement and/or graduate employment.

A criminal record check reports on the history of criminal conviction(s) finding(s) of guilt for an individual based on a search of police files. The certificate issued upon completion of the criminal record check must be current at the date of registration in a Marine Institute program. Students may be required to undergo an additional criminal background check prior to the commencement of a work term.

Two certificates that would meet the requirement are:

- **Certified Criminal Record Check (from RCMP)**
- **Criminal Record Screening Certificate (from RNC)**

It is important to note that if the check results in the identification of criminal conviction(s) or criminal finding(s), the student may not secure a work placement to meet the requirement for graduation.

Programs Requiring Background Check:

Joint Diploma of Technology/Bachelor of Technology Programs:

- Ocean Mapping
- Ocean Instrumentation
- Underwater Vehicles

Diplomas of Technology Programs:

- Nautical Science
- Marine Engineering
- Remotely Operated Vehicles

Technical Certificate Programs:

- Marine Diesel Mechanics
- Bridge Watch Program
- Fire Rescue

Other programs may require this document depending on industry requirements.

Please note that the criminal record check is only current at the time of issue and may need to be updated prior to commencement of a work term or program.

2.4 Readmission

Applicants seeking readmission to Marine Institute programs following a period of withdrawal should note that changes in regulations governing programs may be made. Students who have not interrupted their program may complete their requirements for graduation following the regulations in place when he/she started his/her program. Students who have interrupted their program may be required to complete additional courses as they must convert their program to fit the new regulations.

2.5 Advanced Standing

Applicants who have completed a specific level of certification, or who have completed a specific post-secondary academic program, (to be determined by the program for which Advanced Standing is being sought) at another accredited post-secondary institution, or at Marine Institute, may be eligible for Advanced Standing (admission to a level higher than first year/semester).

When advanced standing is granted, the following conditions apply:

- Courses are not recorded as individual transfer credits and may not be used to apply for transfer credit.
- The original grades are not recorded as graded courses on the Marine Institute academic record.
- Courses are not used in the calculation of cumulative average.

2.5.1 Joint Bachelor of Technology/Diploma of Technology in Underwater Vehicles

Applicants, who have successfully completed the two year Technician Diploma in Remotely Operated Vehicles (ROV) at the Marine Institute are eligible to receive Advanced Standing in this program. Students approved for advanced standing commence their studies in Term 5 of the program.

2.5.2 Technician Diploma in Remotely Operated Vehicles (ROV)

Applicants, who have completed a three year diploma of technology in either Electrical Engineering; Electronics Engineering; Mechanical Engineering or Marine Engineering, at another accredited post-secondary institution, or at the Marine Institute, may be eligible to receive Advanced Standing in this program. The first year foundation requirements are waived for students approved for advanced standing in this program and they commence their studies in Term 3 of the program.

2.5.3 Technical Certificate in Harvesting

Applicants, who possess a valid Fishing Master Class IV Certificate issued by Transport Canada, may be eligible to receive Advanced Standing in this program. The requirements of Term I are waived for students approved for advanced standing, and they commence their studies in Term 2 of the program.

2.6 Degree Programs

The Master of Marine Studies (Fisheries Resource Management), Master of Technology Management, Master of Maritime Management, Bachelor of Maritime Studies and Bachelor of Technology degree programs are listed in this Calendar for information purposes only. These programs are governed by St. John's Campus of Memorial University of Newfoundland and the admission and other academic regulations are outlined in the Memorial University calendar available at www.mun.ca/regoff/calendar/.

2.7 Post Graduate Certificate Programs

Applicants should possess an undergraduate degree, a three-year diploma of technology, or a combination of formal education and work experience which is acceptable to the Admissions Committee.

2.8 Advanced Diploma Programs

Candidates for admission to these programs are required to have official copies of all post-secondary education transcripts submitted to the Registrar's Office Marine Institute by the issuing Institution (Transcripts for applicants who have attended MUN will be obtained internally). Applicants are also required to provide a resume, an academic reference letter and a letter of interest.

2.8.1 Sustainable Aquaculture

Candidates for admission to the Advanced Diploma in Sustainable Aquaculture must be graduates of an appropriate diploma of technology (three (3) years duration), or a degree, or must possess a combination of formal education and work experience acceptable to the Admissions Committee.

2.8.2 Integrated Coastal and Ocean Management

Candidates for admission to the Advanced Diploma in Integrated Coastal and Ocean Management must be graduates of an appropriate diploma of technology (three (3) years duration), or a degree, or must have sufficient relevant work experience as determined by the Admissions Committee, in a discipline related to research, development and/or administration of the coastal zone.

2.8.3 Food Safety

Candidates for admission to the Advanced Diploma in Food Safety must be graduates of an appropriate diploma of technology (three (3) years duration), or a degree, and have completed introductory courses in biology and chemistry.

2.8.4 Water Quality

Candidates for admission to the Advanced Diploma in Water Quality must be graduates of an appropriate diploma of technology (three (3) years duration), or a science degree, and have completed introductory courses in biology and chemistry.

NOTE:

The Marine Institute reserves the right to refuse admission to any applicant.

ADMISSION TO THE MARINE INSTITUTE

2.9 Joint Diploma/Degree Programs, Diplomas of Technology and Technician Diplomas

The admission regulations below apply to all Joint Bachelor of Technology/Diploma of Technology programs and Diploma of Technology and Technician Diploma programs. Candidates for admission to these programs are required to have official copies of all high school and post-secondary education transcripts, submitted to the Registrar's Office Marine Institute by the issuing Institution.

2.9.1 Newfoundland Applicants

Newfoundland applicants seeking admission to any Marine Institute Joint Diploma/Degree, Diploma of Technology or Technician Diploma program are required to have either a senior high school Level III Graduation Certificate; a grade 11 Public Examination Matriculation Certificate; a Level III Adult Basic Education (ABE) Certificate; or other qualifications judged by the Marine Institute to be high school equivalent.

High School Level III, Grade 11 or ABE graduates require the following for admission to a Marine Institute diploma program:

2.9.2 High School Graduates - Level III

Applicants shall have completed Graduation Requirements for high school as set down by the Department of Education and obtained credits in each of the following, with a minimum combined average of 60% in the level three Mathematics, English and Science:

Mathematics:	four (4) credits, two (2) from either Math 2200, 2201, 2204 or Math 2205; and two (2) from either Math 3200, 3201, 3204 or 3205 with a minimum grade of 60% in 3201 or 3204
English:	two (2) credits from English 3201
Science:	four (4) credits, two (2) of which must be from either Biology 3201, or Chemistry 3202, or Physics 3204 or Earth Systems 3209

2.9.3 High School Graduates - Grade 11 Public Examination Matriculation Certificate

A Grade 11 Matriculation Certificate with a minimum average of 60% in the required courses.

2.9.4 Adult Basic Education

Completion of Level III Adult Basic Education (A.B.E.) in the following Department of Education approved courses with a minimum of a 60% average in each of the following three areas:

Mathematics:	2104A, 2104B, 2104C and 3104A, 3104B, 3104C
English:	3101A, 3101B, 3101C
Science:	six (6) credits three (3) of which must be from either Biology 3101A, 3101B, 3101C OR Chemistry 3102A, 3102B, 3102C OR Physics 3104A, 3104B, 3104C OR Geology IS 3212

2.9.5 Applicants from Outside Newfoundland

Individuals from outside Newfoundland seeking admission to any Marine Institute Joint Diploma/Degree, Diploma of Technology or Technician Diploma program are required to have graduated from Grade XII in the University Preparatory Program (the Secondary V Certificate for Quebec applicants) with a passing mark in the required courses and an overall average of no less than 60% in these courses.

2.9.6 International Students Entering Transport Canada Approved Programs

Transport Canada examination and certification of seafarers is available only to Canadian Citizens and landed immigrants. International students completing these programs at the Marine Institute will receive a Diploma of Technology from the Marine Institute but they will have to write their certificate examinations in their own country.

Many programs at the Marine Institute include, in addition to classroom instruction, work terms which are compulsory components of the programs and are necessary in order to fulfill graduation requirements.

International students are responsible for finding their own work terms in their home country, and these work terms must be approved by the Marine Institute Placement Office.

2.10 Technical Certificate Programs

**** Please refer to regulations governing physical requirements as listed in this calendar.**

2.10.1 Aquaculture

Applicants should possess the equivalent of Grade 9 education or appropriate education and/or industry experience acceptable to the Admissions Committee

2.10.2 Bridge Watch**

Candidates for admission to the Technical Certificate - Bridge Watch Program must have successfully completed, at a minimum, Grade Eight (8). Proof of physical fitness must be provided by way of a signed Seafarer's medical. As well, candidates must submit a clear Certificate of Conduct (a certified criminal record check).

2.10.3 Fire Rescue Program**

Candidates for admission to the Technical Certificate - Fire Rescue Program must have a High School diploma with at least a General graduation status. Upon acceptance to the program, all candidates must pass a medical examination and submit a Certificate of Conduct from their Local Police Force. In addition candidates must possess a Valid Driver's License with an Air Brake Endorsement.

2.10.4 Harvesting**

Applicants must have 12 months of approved Transport Canada sea service on a vessel greater than 6 metres in length engaged on voyages beyond partially smooth water limits (Verification of Sea Time letter from Transport Canada) and hold current registration with either the Professional Fish Harvesters Certification Board of Newfoundland and Labrador or an equivalent fish harvester certification body of another Canadian province or territory.

2.10.5 Marine Diesel Mechanics**

Candidates for admission to the Technical Certificate in Marine Diesel Mechanics require Level three attainment.

2.11 Transport Canada Certification Training Programs

Students entering Transport Canada Certification Training Programs are required to be familiar with Transport Canada regulations governing the examination and certification of seafarers. Transport Canada requires that candidates attempting certification examinations have specific minimum periods of sea-service and/or prior certification qualifications. Applicants should refer to Transport Canada's TP2293 for details on the periods of time required for each certificate.

Candidates interested in pursuing Canadian Certification for Seafarers should note that they are subject to certain minimum physical and residency requirements that are prescribed by Transport Canada. Please refer to Transport Canada's Marine Personnel Regulations and the TP11343 (Medical Examination of Seafarers's - Physician's Guide) for the related standards. Proof of physical fitness is also required for students to participate in Marine Emergency Duties (MED) Training which is compulsory for Transport Canada Certification programs. Please refer to regulations governing physical requirements as listed in this calendar.

2.12 Mature Students

Applications may be received from individuals who are 21 years of age or older within one month of the start of the program for which they are applying. The admission requirements outlined earlier describe what are viewed as the minimum qualifications individuals should have in order to succeed in each respective program area. However, the Marine Institute realizes that individuals may obtain the equivalent or other suitable qualifications from alternate sources to prepare them for technology programs.

Therefore, applicants in this category are required to demonstrate that they have gained educational, technical or practical expertise, in the intended field of study. Mature applicants should submit an Application for Admission to the Marine Institute and include the following documentation so that their admission status can be determined:

- a resume outlining all associated education and experience
- a letter of recommendation from employers or other individuals who can attest to an applicant's qualifications
- official academic transcripts of high school and post-secondary studies
- proof of age

2.13 Special Admissions

2.13.1 Applicants Requesting Special Consideration for Admission

Where circumstances warrant, applicants not meeting the regulations for Admission/Readmission to the Marine Institute may be admitted to the Marine Institute with the approval of the Marine Institute's Committee on Special Admissions.

2.13.2 Admission Criteria

- Applicants must submit a completed application for admission/readmission, together with the appropriate fee and supporting documentation.
- Applicants must submit a letter to the Committee on Special Admissions outlining the grounds for requesting special consideration.
- Applicants must also provide a letter from a school principal, guidance counsellor, employer or other responsible person substantiating these grounds.
- In order to allow sufficient time for reasonable and consistent consideration of special cases, supporting letters must be received at least one week prior to the beginning of the semester to which admission is being sought.

2.14 Transfers from Other Canadian Universities/Colleges

Students from other universities and colleges who apply to enter the Marine Institute will be considered for admission upon producing satisfactory documentation. Students forced to withdraw from another university or college will not be eligible for admission to the Marine Institute until the associated withdrawal penalty has been served. Candidates for admission are required to have official, original transcripts from all high schools and colleges or universities they have attended sent directly to the Registrar's Office of the Marine Institute.

Students transferring from the College of the North Atlantic or from Memorial University's degree programs should refer to the Newfoundland and Labrador Transfer Guide at www.aes.gov.nl.ca/postsecondary/transferguide/index.html for details on established credit transfer availability.

2.15 Applicants from Other Countries

Applicants from other countries must submit an Application for Admission to the Marine Institute and have official transcripts, and any other related documentation, forwarded to the Marine Institute well in advance of the semester for which they are seeking admission. All official transcripts must be submitted by the issuing institution directly to the Registrar's Office of the Marine Institute. Please refer to the regulations governing English Proficiency Requirements as listed in this calendar for further information.

ADMISSION TO THE MARINE INSTITUTE

2.16 Credit Transfers and Challenge Examinations

Students transferring from other colleges or universities, and students with prior academic or work experience who feel they are eligible to earn credit from the Marine Institute for work completed towards the requirements of a Marine Institute program, may apply to earn this credit through either an Application for Transfer of Course Credit or through a Challenge Examination. Please refer to the section of this calendar concerning Academic Policies and Procedures for an explanation of the policies, regulations and procedures governing transfers of credit and challenge examination.

2.17 English Proficiency Requirements

English is the primary language of instruction in programs offered at the Fisheries and Marine Institute of Memorial University of Newfoundland. Therefore, applicants seeking admission must possess an adequate knowledge of written and spoken English as a prerequisite to admission. Regardless of the country of origin or citizenship status, applicants will be required to demonstrate proficiency in the English language. This demonstration will take one of the following forms:

- Successful completion of the equivalent of full-time instruction in an English language secondary institution as recognized by the Fisheries and Marine Institute of Memorial University of Newfoundland including successful completion of at least two courses in English language and/or literature at the Grade XII (or equivalent) level.
Please note that these courses must be other than E.S.L. (English as a Second Language) courses.
- **Test of English as a Foreign Language (TOEFL)**
A minimum score of 550 is required on the paper-based test, or a minimum score of 213 on the computer-based test or a minimum score of 79-80 on the internet based test of the Test of English as a Foreign Language (TOEFL). The official results of the TOEFL must be forwarded directly to the Marine Institute from the TOEFL Testing Centre. Applicants submitting a TOEFL score of less than 550 or 213 or 79-80 will be considered as not having met the English Language requirements of this institution and will not be admitted until English proficiency can be demonstrated. Information regarding TOEFL programs is available from the Educational Testing Service, Box 899, Princeton, New Jersey, U.S.A., 08540, from U.S. Embassies and consulates, or from offices of the U.S. Information Services.
- **Michigan English Language Assessment Battery (MELAB)**
A minimum score of 85 will be considered as having demonstrated English Language Proficiency for admission purposes only. The official results of the MELAB must be forwarded directly to the Marine Institute from the MELAB Testing Centre. Applicants submitting a Michigan English Language Assessment Battery with results of less than 85 will be considered as not having met the English proficiency requirements of this institution and will not be admitted until proficiency in English can be demonstrated. Information on the Michigan Test of English may be obtained from the Testing and Certificate Division, University of Michigan, 2001 North University Building, Ann Arbor, Michigan, U.S.A., 48109-1057.

- **International English Language Testing System (IELTS)**

A minimum overall Band Score of 6.5, and a band score of at least 6 on both the Writing Band and the Reading Band are required. The official results of the IELTS must be forwarded directly to the Marine Institute from the IELTS Testing Centre. Applicants submitting an IELTS assessment with results of less than 6.5 on the Overall Band Score and/or a band score of less than 6 on either the Writing and/or the Reading band, will be considered as not having met the English proficiency requirements of this institution and will not be admitted until proficiency in English can be demonstrated. Information on the International English Language Testing System may be obtained from IELTS Inc., 100 East Corson Street, Suite 200, Pasadena, CA 91103, USA

- **The Canadian Academic English Language (CAEL) Assessment**

Minimum band scores of between 50 and 60 in each of the four skills tested (Reading, Writing, Listening, Speaking), with at least two band scores of 60 are the minimum requirements necessary for admission to the Marine Institute. The official results of the CAEL Assessment must be forwarded directly to the Marine Institute from the CAEL Assessment Centre. Applicants submitting a CAEL Assessment of less than 50 in each of the four skills tested, and/or an assessment in which there are not at least two band scores of at least 60, will be considered as not having met the English proficiency requirements of this institution and will not be admitted until proficiency in English can be demonstrated. Information pertaining to the Canadian Academic English Language (CAEL) Assessment may be obtained from:

**The Canadian Academic English Language
Assessment Office
300 St. Pat's Building, Carleton University
1125 Colonel By Drive
Ottawa, Ontario, Canada
K1S 5B6**

**On-line: www.cael.ca Email: cael@carleton.ca
Tel: 613-520-2600 ext. 2271**

- **Canadian Test of English for Scholars and Trainees (CanTEST)**

Minimum band scores of 4.5 in the listening comprehension and reading comprehension sub-tests and a score of 4 in writing are required to satisfy Marine Institute English proficiency requirements. The official results of the CanTEST must be forwarded directly to the Marine Institute from the CanTEST Testing Centre. Applicants submitting a CanTEST test assessment with band scores of less than 4.5 in the listening comprehension and reading comprehension sub-tests and a score of less than 4 in writing, will be considered as not having met the English proficiency requirements of this institution and will not be admitted until proficiency in English can be demonstrated. Information pertaining the Canadian Test of English for Scholars and Trainees may be obtained from:

**CanTEST Language Testing Services
70 Laurier Avenue East
Room 130,
Ottawa, ON,
K1N 6N5**

In extenuating circumstances and with the approval of the Admissions Committee, applicants may be permitted to provide proof of proficiency in English based on a proficiency test designed and administered by the Department of English at Memorial University.

2.18 Admission Status

Non-Degree Programs

The admission status of an application to the Marine Institute for non-degree programs may fall in one of the following categories:

2.18.1 Incomplete:

This classification refers to an application which has been received and acknowledge and the review of the applicant for admission is currently underway or about to begin. Following this review, additional information may be requested from an applicant or the applicant may be classified as Accepted, Conditionally Accepted, Not Accepted or Wait Listed.

2.18.2 Complete:

This classification indicates that all information and documentation has been received and the application is ready for review.

2.18.3 Decision:

This classification indicates that a decision has been made on an application. Decisions include:

Accepted:

An applicant will be officially accepted when all entrance requirements are met and a position is reserved in the program for the applicant.

Conditionally Accepted:

Students in their final year of high school (Level III) in Newfoundland, or individuals attending other post-secondary or other secondary institutions may be Conditionally Accepted to the Marine Institute prior to the official release of their final grades and academic standing.

This conditional acceptance remains valid until the Provincial Department of Education releases the final results for high school students or an official transcript of results is provided by the post-secondary or other secondary institution in question. A final determination of each applicant's admission status will be made upon receipt of the official grades and standings. Conditionally Accepted applicants who meet all of the entrance requirements will be granted formal acceptance to the Marine Institute program for which they have been conditionally accepted. Conditionally Accepted applicants who fail to meet the program entrance requirements will be classified as Not Accepted.

Not Accepted:

An applicant is not accepted to the Marine Institute when the individual does not meet the entrance requirements.

2.18.4 Wait Listed:

An applicant is placed in this category when the program or program option for which he/she applied is full. The applicant

has met the program entrance requirements and has been placed on a waiting list and will be offered a place as one becomes available.

For diploma program admission, the waiting list is maintained up to the deadline to register/add courses in the academic semester.

2.18.5 Withdrawn:

At any time during the application review and admission process, if the applicant notifies the Registrar's Office that he or she is not interested in joining the Marine Institute program for which he or she has applied for admission, the application will be withdrawn and no further communication will be made with the applicant concerning admission or registration for the program offering in question.

2.18.6 Application Rejected, Incomplete

Any applications which are incomplete after the registration deadline in any given term will be assigned a decision application rejected incomplete. You must contact the registrar's office to discuss your application eligibility for subsequent terms.

The Fisheries and Marine Institute of Memorial University is governed by policies, rules and regulations designed to ensure fair and equitable treatment for the entire Institute community. Some of the regulations deal with the normal workings of the Institute (registration deadlines, etc.) and pertain to all students. Other regulations, however, especially those concerned with readmission, supplementary examinations, deferred examinations and academic dishonesty, apply to certain students in specific situations. Every student has the right to appeal decisions resulting from the application of Marine Institute regulations.

3. INSTITUTE RULES

3.1 Academic Misconduct

The Marine Institute values academic honesty highly and does not tolerate academic misconduct. All students are required to produce original work for evaluation where it is requested and are expected to be familiar with all of the regulations governing academic misconduct. Students who commit acts of misconduct are subject to disciplinary action governed by the policies outlined further in this section of the Calendar. Acts of academic misconduct include, but are not limited to:

- Cheating on assignments, tests, projects, reports, laboratories and examinations.
- Impersonating another student or allowing oneself to be impersonated
- Plagiarism
- Theft of academic materials
- Use and/or distribution of stolen academic materials
- Submitting false information
- Submission of the same material for two or more courses
- Academic Mischief such as tampering with examinations, gaining unauthorized access to examinations, removing materials from the examination room, violating other examination regulations or any other acts not described above which are considered to be acts of misconduct.

ACADEMIC POLICIES AND REGULATIONS

3.2 Discipline

The general discipline of the Marine Institute is based on rules of common sense and courtesy. Smoking is not permitted. Defacement of buildings and damage to equipment are considered serious offenses. The Marine Institute reserves the right to dismiss any student who does not comply with these regulations.

3.3 Student Attendance

It is the Marine Institute's policy that attendance in all classes, labs, and all other scheduled meetings is compulsory for students in Diploma of Technology and Certificate programs. In exceptional cases, the course instructor may excuse a student from one or more classes. Acceptable cause for an excused absence may include illness, bereavement, family emergencies or any other cause deemed acceptable by the instructor. It is the student's responsibility to provide satisfactory proof of the necessity for absence.

A majority of the courses in some programs, including Nautical Science and Marine Engineering and all industry response courses, have specific minimum attendance requirements. In some short courses, an attendance rate of 100% is mandatory. However, unless otherwise specified, a rate of un-excused absence that exceeds 10% is considered to be unacceptable. Students are strongly advised to read the course outline for each course for which they are registered with respect to attendance requirements and other specific regulations governing that course.

A student who is inexcusably absent for more than an acceptable number of the scheduled meeting times for a course will be deemed to be in violation of this policy and will be required to consult the program chair or designated advisor. If, following consultation with the program chair or designate, the student's attendance does not improve, he or she may be discontinued from that course. In such cases, if this occurs following the course drop or fees refund deadlines, the student will be subject to any applicable academic or financial prejudice.

Attendance is included as part of the student's academic record and will be one of the criteria used to determine eligibility for continuation in a program or for certification by the Marine Institute or external agencies such as Transport Canada.

Specific guidelines and related procedures are available from the offices of each School Head or the Registrar.

The registration of each student in a course implies that he or she understands this responsibility and agrees to abide by the above policy.

3.4 Usage of Computer Facilities

The following guidelines are a subset of the Regulations Governing MI Computer Facility Usage and are applied to all individuals accessing computer systems:

- All access to computer services and the issuing of computer accounts and passwords, must be approved by the Computer Services division of the Marine Institute in accordance with the Regulations for Issuing Accounts.

- No attempt should be made to discover other users' passwords nor should any such passwords discovered by chance be used. Passwords are distributed to individuals for the purpose of gaining access to a computer system and should remain confidential. Any suspected leak of a password OR other loopholes in system security should be reported immediately to the Computer Services department.
- Software applications and other proprietary information are not to be copied, this includes information which has been stored by Computer Services or any other computer users. This could result in a breach of copyright or license agreement.
- The hardware components of any computer system must not be moved. The software or hardware configuration of computer systems must not be altered.
- The Marine Institute's computing facilities may not be used for non-institutional projects, or for personal or commercial purposes.
- No one should deliberately attempt to degrade the performance of a computer system or to deprive others of resources or access to any university computer system.
- Software programs that were not previously installed on the systems should not be operated. Any such use could increase the possibility of infection by computer viruses. Computer Systems are not to be used for games or other non-academic recreational activities (e.g. MP3's, Chat, On-line games).
- Abusive, fraudulent, or harassing messages are not to be sent or stored by users. Storage and possession of property is strictly prohibited.
- Violations of the Regulations governing MI Computer Facility Usage may result in disciplinary action.

4. EXPLANATION OF TERMS

The Marine Institute's academic year runs from the first day of September to the last day of August of each year.

- A **Term** or **Semester** means a period of approximately fifteen weeks during which regular classes are held and, for diploma of technology, technician diploma and advanced diploma programs, in which there are at least 65 teaching days. Normally, the fall semester begins in September, the winter semester in January and the summer semester in May.
- **Technical Session** is a period of study which is normally six weeks in duration, but may be anywhere from three to eight weeks in duration, depending on the program of study. The Technical Session normally follows the Winter semester or may precede the summer session for programs which normally have one or more scheduled summer sessions. Technical session normally begins in April of each year.
- A **course** is a unit of work in a particular subject which normally carries credit towards the fulfillment of the requirements for a particular certificate or diploma and for which achievement of the established learning objectives are formally measured and recorded.
- A **credit** is awarded for each course completed in which the student obtains at least the minimum passing grade.
- A **prerequisite** course is a course which must be successfully

completed prior to registration in the course for which it is required. A co-requisite course is a course which may be taken concurrently with the course for which it is required.

- **Program** refers to an academic program forming a coherent unit of study including a series of courses, the completion of which, if other requirements are met, qualifies the candidate to receive the appropriate award.
- **Award** refers to the type of certificate or diploma to be conferred upon candidates completing a Marine Institute Program who are approved by the Marine Institute Academic Council to receive this award. Awards are issued upon the successful completion of a program of study which has been approved by the Marine Institute Senate (August, 1994 or earlier) or Academic Council (September, 1995 or later). At the Institute, these include Advanced Diplomas, Diplomas of Technology, Technician Diplomas, Certificates, Certificates of Achievement and Certificates of Participation. Marine Institute Advanced Diplomas, Technology Diplomas, Technician Diplomas and Certificates are conferred once a year only regardless of when program requirements are completed. This occurs during the Institute's annual graduation ceremony held in June.
- **Advanced Diploma** programs provide in-depth training in a specific technical area to graduates of at least a first degree or three-year technology diploma program. These are normally one academic year in length, except that work terms or job placement requirements may extend programs beyond this time. Program duration in years is shown on the Diploma.
- **Post Graduate Certificate** program is designed to provide students with specialized knowledge that is less intensive than an advanced Diploma or Master's Degree. A certificate program represents a focused collection of courses that when completed affords the student a record of academic accomplishment in a given discipline.
- **Joint Degree/Diploma**
- **Diploma of Technology** programs are designed to prepare graduates for employment as technologists. These programs are normally three academic years in length. However, some programs may extend beyond this time as a result of work term or job experience requirements.
- **Technician Diploma** programs are designed to prepare graduates for employment as technicians. These programs are normally two years in length.
- **Technical Certificate** programs provide training in specific technical areas. Programs may be modular, full or part-time and of variable duration, but not less than one academic semester or its equivalent.
- **Certificates of Achievement** are issued upon successful completion of an academic program of less than one academic semester, or its equivalent, in length, or upon completion of an academic course for which learning is measured and evaluated.
- **Certificates of Participation** are issued upon completion of a non-formalized course or workshop or program, lasting from a few hours to several days for which specific learning or performance is not measured or evaluated.

5. PARTNERSHIP/SPONSORED PROGRAMS

From time to time the Marine Institute enters partnerships for the purpose of developing or delivering courses or programs. These partnerships may be with other educational institutions, with public agencies or with private companies. Where appropriate, such partnerships may be formally recognized on certificates. This may be done in one of the following ways:

5.1 The Marine Institute is the Awarding Institute

When a course or program is developed largely by the Marine Institute, either in partnership with or on behalf of another institution or agency, an appropriate Marine Institute Certificate will be awarded. This certificate may contain the phrase "designed in partnership with" as an additional description of the course or program.

5.2 A Joint Certificate is Awarded

When a course or program is developed and/or delivered in partnership with another educational institution, a joint certificate formally recognizing both institutions may be awarded. This certification would be consistent with Marine Institute criteria and its award would require Marine Institute Academic Council approval.

The certificate itself would recognize both institutions and contain the signatures of both chief executive officers or duly authorized officers of either institution.

6. CREDIT TRANSFERS

6.1 Applying for Transfer of Credit

Students applying for transfer of credit must submit an Application for Transfer of Credit to the Office of the Registrar, preferably with their Marine Institute Application for Admission. The Application for Credit form can be obtained upon request from the Office of the Registrar or the information centre and must be supported by the following documents:

- Official transcript(s) from any university and college attended (if not already provided during the application process). Specifically, applicants must ensure their request is supported by an official transcript of their marks for the course in question.
- Official Calendar Descriptions or Course Outlines from the other institution(s), where the work in question was previously completed, of the courses claimed for credit.

As an application is not considered complete until these documents have been received, applicants are advised:

- to submit their Application for Admission with their Application for Credit as early as possible, and that it is the student's responsibility to provide the pertinent documents to allow sufficient time to evaluate the application for credit and to assess admission status.

Where possible, applicants will be advised by the Office of the Registrar of the results of transfer credit evaluations in advance of registration. Where approval has not been received in advance of Registration, students should register for the course in question pending the outcome of their application.

ACADEMIC POLICIES AND REGULATIONS

6.2 Transfer Credit - Advanced Diplomas and Post-Graduate Certificates

It must be emphasized that the transfer of credit is not an automatic occurrence. Upon recommendation of the Program Chair and/or the School Head, work completed for advanced/graduate credit may be transferred in partial fulfillment of advanced diploma or post-graduate certificate requirements. The following restrictions apply:

- A student who has successfully completed graduate level courses at Marine Institute as part of one Advanced Diploma or Post-Graduate Certificate program, who is subsequently admitted to another Advanced Diploma or Post-Graduate Certificate program, may apply to transfer appropriate courses to the current Program, provided such courses have not been used to satisfy other requirements of the current Program and provided a mark of 65% or higher was received.
- A student who has successfully completed graduate level courses at another institution recognized by Senate may, upon admission to an Advanced Diploma or Post-Graduate Certificate Program at Marine Institute, apply to transfer appropriate courses to the current program, provided such courses have not been used to satisfy other requirements of the current Program and provided a mark of 65% or higher was received
- Advanced/graduate course(s) (which includes Advanced Diploma, Post-Graduate Certificate and Masters level courses), shall not be considered eligible for transfer if they have been completed more than seven (7) years prior to the date of admission into the current Program.
- The maximum number of transfer credits shall not exceed two credits per Advanced Diploma or Post-Graduate Certificate Program.
- All course work considered for transfer credit must clearly be advanced/graduate level work (which includes Advanced Diploma, Post-Graduate Certificate and Masters level work).
- Transfer credit will not be awarded for course work completed on a pass/fail basis
- Transferred work will not be counted in computing the term/cumulative average of courses completed in the Advanced Diploma or Post-Graduate Certificate Program.
- Permission to take courses at other universities for credit in Advanced Diploma or Post-Graduate Certificate Programs must be approved in advance by the School Head.

6.3 Evaluation of Credit Applications

Credit for courses completed at this or any other institution will be considered by the Marine Institute under the following conditions:

- Students apply to the Registrar on the Application for Transfer of Course Credit form;
- Applications are received within four weeks of the course registration dates;
- The application includes all of the pertinent documentation as outlined above.
- Further information regarding courses previously completed, as required by the Marine Institute in order to fully evaluate an application for credit, is provided by the student. The

information requested may be obtained by the student from the other institution or may be submitted directly to the Marine Institute by the other institution, upon request by the Marine Institute to the applicant. Such information may include Official course outlines or syllabi and information about the number of hours of instruction.

- Students are permitted one application for credit per semester only, i.e., if a student wishes to apply for credit in more than one subject in any semester, all subjects must be requested on one form.
- Only those courses accepted will be recorded as transfer credit courses on the Marine Institute transcript.
- Credit transferred from other institutions will be recorded only upon a student's registration in a program.
- The Marine Institute reserves the right to award credit for any application it may receive and process.

6.4 Transfers From Other Newfoundland Post-secondary Institutions

For students transferring from another Newfoundland institution to the Marine Institute, the Transfer Guide, published by the Newfoundland and Labrador Council on Higher Education, is a compendium of current transfer credit precedents available to students in Newfoundland. It is a valuable reference guide for matters relating to the transfer of credit from one institution to another within the Newfoundland public post-secondary education system. In considering applications for credit transfer, this guide is used by the Marine Institute to cross-reference previously approved credit transfers. A copy of this guide is available from the Office of the Registrar, or on-line at www.aes.gov.nl.ca/postsecondary/transferguide/index.html.

7. CHALLENGE EXAMINATIONS

A Challenge Examination is written by a student who wishes to seek credit in a course by a procedure other than normal class instruction or transfer of credit from another post-secondary institution.

The Marine Institute of Memorial University recognizes that some students may have achieved competence in certain subject areas through experience gained elsewhere. This experience, which may warrant consideration for academic credit may consist of courses taken at other education institutions or skills acquired from work or learning outside the Marine Institute. It should be noted that challenge for credit is not offered for Work Terms or Internships. Students will be required to show documented proof of having received the experience. The Marine Institute shall have the responsibility to evaluate each student's application and determine which courses may be challenged, subject to the procedures and regulations outlined below:

7.1 Application for a Challenge Examination

Students must complete an Application for a Challenge Examination which can be obtained from the Office of the Registrar. The student must complete the application and submit it to the Registrar. The application requires the student to document the previous education or work experience which the student believes is adequate preparation for challenging the course in question for credit.

The Registrar's office forwards applications to the appropriate School for evaluation of each student's request. This evaluation determines if credit for the course may be obtained in this manner. If an appropriate examination format is approved for the applicant by the School, the School then notifies the Registrar's office of the nature, format and schedule for the exam. This information is then communicated to the student by the Registrar in writing with any further related instructions from the School. If the student wishes to proceed with the challenge exam as prescribed, he/she will be required to confirm his/her agreement in writing and to pay a non-refundable tuition fee equivalent in amount to the fee for one course credit for the semester in question.

7.2 Challenge Examinations Regulations

Receipt of payment of the applicant's required tuition fee by the Cashier, following written confirmation of the Challenge Exam availability from the Registrar, shall constitute an official request for a Challenge Examination. The applicant is then entitled to challenge the course in question for credit through the agreed upon examination.

- Challenge for Credit is available only to students formally admitted to, and registered in, a program leading to a Certificate or Diploma.
- A maximum of five (5) credits towards a Marine Institute Diploma may be acquired by challenge exam at the Marine Institute or elsewhere. A maximum of two (2) credits may be obtained towards a Marine Institute Certificate.
- A challenge credit may not be used as a substitute for grade raising or to replace a failed course.
- The Challenge Examination shall be worth 100%.
- A student may not challenge a course (or its equivalent) in which he/she has been previously registered or which he/she has already challenged.
- The passing grade for a challenge will appear on the transcript as CH. Challenge grades are not, therefore, computed in averages and are not used in evaluating scholarship standing, but are counted as course attempts. Failures (FA) will be noted on the transcript.
- A student may not withdraw the challenge once he/she has officially requested a Challenge Examination. Failure to complete the exam as approved will constitute failure of the exam in question.
- Applications to write challenge examinations are to be filed in accordance with deadlines for Supplementary Exams. The Registrar shall notify the student of the status of the Challenge examination result by way of a Challenge Exam Report and the final result will be included as part of the student's end of semester grade report.

8. PROGRAM/COURSE REGISTRATION

The registration schedule for each semester or technical session, for each program, is set by the Registrar. For the Fall Semester, the registration period commences late July or early August. For the Winter Semester, registration commences in December. For Technical Session, the registration period is normally the two weeks preceding the first day of Technical Session.

The dates for registration for each semester and start of classes are published each year in the Marine Institute Academic Diary. The specific registration schedule for each program is published prior to the start of each semester or session and is posted or distributed to students.

Students are required to register before the published registration deadline. Students who do not register before the deadline may be denied permission to register. If in such cases, a student is permitted to register late, the student must pay a late registration fee. No student may register following the last date to officially add courses. Specific deadlines are listed separately under the regulations for course changes.

9. COURSE CHANGES

A student who wishes to officially drop or add a course prior to the official add or drop date can do so online through the student self service website at https://www5.mun.ca/admit/twbkwbis.P_WWWLogin. A student who wishes to drop or add a course after the official add or drop date must obtain and complete an official **Course Change Form** from the Office of the Registrar or the Institute's Information Centre, complete the form, have each course change approved by his/her Program Chair, and return the **Course Change Form** to the Office of the Registrar for final approval. Any course changes outside the official dates of drop and add will be reviewed on a case by case basis and only approved in exceptional circumstances.

9.1 Term or Semester

The official date for adding courses is **TWO WEEKS** from the first day of classes in a semester.

The official deadline for dropping courses is **SIX WEEKS** from the first day of classes in a semester. For students in Primary Technology in the Fall Semester, in their first semester at the Marine Institute, the deadline for dropping courses is **EIGHT WEEKS** from the first day of classes.

9.2 Technical Session

In a Technical Session, the official deadline to add courses is the end of the **FIRST DAY** of classes. Courses may be added beyond this deadline only with the written permission of the School Head and the Registrar.

In a Technical Session, the official deadline for dropping courses is the end of the **TENTH DAY** of classes for courses which are of 21 days duration or longer. For Technical Session courses which are less than 21 days in duration, the following table applies:

Length of Course:	Deadline for Dropping Courses
up to Five days	End of Second day of Classes
Six to Ten days	End of Fourth day of Classes
Eleven to Fifteen days	End of Sixth day of Classes
Sixteen to Twenty days	End of Eighth day of Classes

ACADEMIC POLICIES AND REGULATIONS

NOTE:

For students in Transport Canada approved programs, minimum attendance requirements apply which may reduce the length of time available to students to add applicable courses

10. CLASSIFICATION OF STUDENTS

10.1 Full-Time Students

The full-time course load in a Semester for a diploma or certificate student is four or more courses. A student registered for four or more courses in a Semester shall be considered to be registered as a full-time student for that semester.

The full-time course load in a Technical Session for a diploma student is considered to be two or more courses when that student is registered in a Program for which the normal course load for the respective Technical Session is three or more courses.

Students registered for two or more courses in a Technical Session in such cases shall be considered to be registered as a full-time student for that session.

For students registered in a Technical Session for a diploma program for which the normal course load is one or two courses, the students shall be considered to be registered as a full-time student when registered for one course in that session.

10.2 Part-Time Students

A student registered for three or fewer courses in a semester shall be considered to be registered as a Part-time student for that semester. Students registered for one course in a Technical Session for which the normal course load is three or more courses shall be considered to be registered as a part-time student for that session.

10.3 Other Requirements

Students should note that external sponsoring agencies such as Human Resources Skills Development Canada and Canada Student Aid may have requirements for the students they sponsor to be in attendance for a minimum number of hours per week and/or to be enrolled for a minimum number of weeks while they are sponsored. Students are responsible for ensuring that they are familiar with the sponsor's requirements before they register and that they meet the minimum standards of attendance of the sponsoring agency.

11. PROGRESSION IN A PROGRAM

Courses are generally studied as they appear in the program outline. By following the outline, students should be able to complete their program in the shortest possible time. In all instances, requirements for prerequisite and co-requisite courses must be satisfied. The official program and course outlines contain information regarding such requirements. In evaluating a student's final standing, the work of the entire semester is taken into consideration. This includes semester examinations, class tests, laboratory work, technical work reports together with attendance.

11.1 Program Changes

Changes in regulations governing programs may be made from time to time. Student who have not interrupted their program may complete their requirements for graduation following the regulations in place when he/she started his/her program. Students who have interrupted their program may be required to complete additional courses so that they may meet program requirements under the new regulations.

12. READMISSION AND CONTINUANCE

Subject to the readmission regulations described in the following paragraphs, a student enrolled in a certificate or an advanced, technology, or technician diploma program, and registered as a full-time student, shall be permitted to continue to the next semester if he/she passes at least 50% of the courses for which a grade is awarded that semester. If he/she passes fewer than 50% of the courses for which a grade is awarded that semester he/she will be required to Withdraw (WD).

Students are required to maintain a cumulative average of 60% at the end of each semester of study.

A student who passes 50% of the courses for which a grade was awarded in a semester, but has one or more failures and has a cumulative average of at least 60% will be awarded a Clear Standing (GO) and will be readmitted to the following semester without conditions.

A student who was admitted to the semester with a Clear Standing (GO) or better but who earns a cumulative average of between 50% and 59% at the end of a semester, and has passed 50% of the courses for which a grade was awarded in the semester, will earn a Conditional (CR) standing and will be conditionally readmitted to the next semester. If, at the end of the next semester, the student again passes 50% of the courses for which a grade was awarded and earns a cumulative average of between 50% and 59%, the student will be required to Withdraw (R1) from the Marine Institute for a minimum of one full semester.

Students who have a cumulative average below 50% will be required to Withdraw (R1) for a minimum of one semester. Technical or summer semester sessions do not constitute a Semester.

With the exception of students admitted to the Marine Institute with an advanced standing of 10 credits or more, a student in his or her first semester at the Marine Institute will be readmitted to the second semester of study provided that he or she passes 50% of the courses for which a grade was awarded. First semester students who pass 50% of the courses who have a cumulative average of less than 60% will be readmitted to the next semester with an Academic Warning (AW).

A student who has been required to withdraw (R3) from the Marine Institute or any other public post-secondary institute, on a total of three (3) occasions will be academically dismissed. In this instance a student may be readmitted to the Marine Institute only in exceptional circumstances and only upon approval of an Admissions Committee.

12.1 Readmission Following Withdrawal

Subject to the information above students who withdraw voluntarily or are required to withdraw (R1, R2, R3) for academic or disciplinary reasons are required to reapply for admission to the Institute as per the Admissions policies and procedures.

12.2 Withdrawal From the Marine Institute

A student who wishes to voluntarily withdraw from the Marine Institute and officially drop all courses for which he/she is currently registered must do so on-line by dropping all courses through student self-service. Refund policies will be applied.

12.3 Withdrawal Under Special Circumstances

Students who wish to withdraw after the official drop date, without academic penalty, may be permitted to do so in cases of serious illness or other compelling circumstances. In cases of illness a detailed medical certificate will be required. A student seeking such consideration must apply to the Registrar who will then consult with the instructors and School concerned. If approved, "DR" will be assigned to the course(s) in question and the student will not incur academic penalty.

13. REPORTING PERFORMANCE

13.1 Grade Reports

Semester grade reports are released via student self-service at the end of each semester for all Advanced, Technology and Technician Diploma and Certificate Programs. These list the courses taken during that semester and the grades or results obtained by one of the letter codes below. This also reports the standing earned by the student at the end of the period of study. Marks may be withheld in cases where students have outstanding fees or are under disciplinary action. The following provides an explanation of grades reported at the end of each semester or session:

- A Numeric Grade indicates the grade received.
- A Numeric Grade followed by the letter "F" indicates that even though the grade received is above 50%, the required passing grade for that course is higher than the actual grade received.
- PAS indicates that the student's performance meets expectations but no numeric grade is recorded. DR indicates that the student dropped the course without academic prejudice. No grade is provided.
- DRF indicates that the student dropped the course but has incurred academic prejudice. A grade of 0% is recorded.
- INC or IP indicates that the course is not yet complete. This may be due to a course's duration being longer than one semester or due to a student receiving an extension to complete course work.
- GNR indicates that no grade has yet been received from the School by the Office of the Registrar. In this circumstance, the grade will be entered as soon as it is received.

13.2 Aegrotat (AG)

Aegrotat status in a course refers to a student's eligibility to continue in his/her program without completion of all semester work for the course in question, with advancement to subsequent courses on the basis of the work completed. Aegrotat standing

confers credit for the course(s) under consideration. However, no grade is assigned and Aegrotat (AG) is entered on the student's permanent record.

Aegrotat will be awarded to a student who has:

- encountered exceptional circumstances such as illness which prevented completion of the semester's work;
- demonstrated the ability to do the work; and,
- received the recommendation of the School Head.

13.3 Audit

An Auditor is a student who is awarded permission, in writing by the School, to attend lectures in a course on the understanding that he/she may not participate in any assignments, examinations or any other form of evaluation offered for the course involved. Such permission will be contingent upon seat availability in the course and the satisfaction of the instructor of the course that having a student audit the course will not be a disruption for him/her or the remainder of the class.

Once a student has registered to audit, he/she may not change their status to earn credit. Nor will a student who has registered for credit in a course be permitted to change his/her status to Audit.

The student may, in succeeding semesters, take any course for credit that was previously audited. Auditing students must present a signed Permission to Audit Form to the Office of the Registrar. Permission to audit a course will not be granted until the number of students registered for credit in the class is known.

13.4 Deferred Final Examinations (DEF)

A student who is unable, for a valid reason, to write a final examination at the scheduled time may apply for a Deferred Examination. The application must be supported by a detailed medical certificate if the absence is due to illness or hospitalization.

If a student becomes ill or receives notification of severe domestic affliction during an examination, and wishes to discontinue the examination and apply for a deferral, he/she shall report at once to the chief invigilator, hand in his/her unfinished examination and request the exam be cancelled. If illness is the cause, he/she must report directly to a physician so that any subsequent application for a deferred examination may be supported by a medical certificate.

If a student writes an examination, submits his/her paper for marking, and later reports extenuating circumstances to support his/her request for cancellation of his/her paper, such a request will not be considered.

13.5 Repeats

Students are permitted a maximum of three attempts at each course for which a grade is awarded by the Institute. Thus a student is permitted a maximum of two repeats for each course on his/her record.

13.6 Part Time

A student who is taking three or fewer courses in a semester. Part-time students may or may not be enrolled in a certificate or diploma program.

ACADEMIC POLICIES AND REGULATIONS

13.7 End of Term Academic Status

At the end of each semester a student's exit/readmission status shall be denoted on a student's grade report or transcript with one of the following:

13.7.1 Clear Standing (G0, G1, G2)

The student has passed at least 50% of all the courses for which a grade was awarded and has a cumulative average of at least 60%

13.7.2 Academic Warning (AW)

This standing applies to first semester students only. The student has passed 50% of the courses for which a grade was awarded, but has a cumulative average of less than 60%.

13.7.3 Conditional (CR, C1, C2)

The student passed 50% of the courses for which a grade was awarded and has a cumulative average between 50% to 59%, except in the case where these conditions were met in the previous semester and the student was admitted to the current semester on condition. In this case the student is required to withdraw.

13.7.4 Withdrawal (WD) (R1, R2, R3)

A student who, in a given semester, meets the requirements for conditional standing but who earned a Conditional Standing for his/her previous academic semester is required to withdraw for one semester. If the requirements for Conditional Standing are met as a result of grades earned during the Technical Session and the student earned a Conditional Standing in the previous semester, the student will be awarded a Conditional Standing and will be conditionally readmitted to the next semester or session.

A student who passes fewer than 50% of the courses for which he/she is registered in a semester is required to withdraw for one semester.

Technical or Summer semester sessions do not constitute a Semester.

A student whose cumulative average is less than 50% is required to withdraw for one semester.

13.7.5 Academic Dismissal (R3)

A student who has been required to withdraw from this or any other public post-secondary Institution on three (3) occasions will be Academically Dismissed (AD). In this instance, a student may be readmitted to the Marine Institute only in exceptional circumstances and only upon approval of the Admissions Committee.

14. TRANSCRIPTS

A transcript of a student's academic record is available online by accessing the Student Web, or by contacting the Marine Institute Office of the Registrar. No transcript will be issued while the student is financially indebted to the Institute.

15. EXAMINATIONS

Dates of final and supplementary examinations will be set in advance. No more than two final examinations will be scheduled

for a student on any one exam day. In the event that a student is scheduled for more than two exams in the same day then they can apply for a deferred exam. The method of evaluation is set out in the Official Course Description.

Instructors shall not be permitted to give tests or quizzes worth more than 10% of the total final mark in the two week period prior to the start of semester examinations. As well no previously unassigned work may be assigned in the last two weeks of the semester. This regulation does not apply to:

- Courses with no final semester examination.
- Laboratory examinations.
- Assignments given prior to this period which are due in the two weeks prior to examinations.
- Courses offered in the Technical Session.

16. EXAMINATION RE-READS

Any student may apply to have a final examination re-read, whether or not he/she has passed the course. The application must be made in writing to the Registrar within one month after the student has been officially informed of the result of the examination(s). The appropriate fee must accompany the application. The fee will be refunded if the student's grade is raised once the final examination is re-read. If the grade remains the same or is lowered, the fee is not refundable.

If the student's grade is changed as the result of a reread, the revised grade will replace the original result on the student's record and will be denoted by the grade type "RR" on the transcript except in the case where the original grade was a passing grade and a re-read results in a failing grade. In such instances, the original grade will remain on the student's record.

17. SUPPLEMENTARY EXAMINATIONS REGULATIONS

Marine Institute Supplementary Examination Regulations apply to students in Advanced Diploma, Diploma of Technology, Technician Diploma, and Technical Certificate programs.

- The privilege of writing supplementary examinations is limited to students who:
 - (a) have failed no more than two subjects;
 - (b) have obtained at least 70 % of the specified passing grade in each subject failed;
 - (c) have obtained a term or session average of at least 55%;
 - (d) were registered on a full-time basis for the period of study in question.
- Only one attempt to write a supplementary examination will be permitted in each subject allowed under these regulations.
- Students are permitted to write a maximum of two supplementary examinations for the duration of their enrollment in a program. Once a student has written two supplementary examinations, he/she must repeat any failed courses in order to earn credit for these courses.
- Any student who has failed to complete laboratory work, workshop or drawing work to the satisfaction of the School, is ineligible for supplementary examinations.

ACADEMIC POLICIES AND REGULATIONS

- Applications to write supplementary examinations are to be filed at the Registrar's Office no later than five (5) business days after the release of grades by the Registrar's Office, with the exception of the Fire Rescue Program. The date of the official release of grades for this purpose is the day that grades are released via student self-service (Web).
- Applications to write supplementary examinations for students in the Fire Rescue program must be received within two (2) days of notification of examination results, and supplementary exams must be written within seven (7) days of the original exam
- The prescribed fee must accompany the application, which is not refundable.
- Supplementary examinations will be written before or at the beginning of the next academic semester or session.
 - For examinations written in April, supplementary exams will be scheduled in April or May.
 - For examinations written in May, supplementary exams will be scheduled in June or September.
 - For examinations written in December, supplementary examinations will be scheduled in January.
- Supplementary exams must be written during the exam period scheduled for the course in question. The application for a supplementary exam must be filed within the normal application period as specified above.
- For students permitted and scheduled to write a supplementary examination, failure to write a scheduled supplementary examination without prior written notice satisfactory to the Registrar, will result in a grade of 0% for the exam portion of the course.
- A Supplementary exam cannot be written for a course in which a student has received a reduction of any portion of the course grade as a result of Academic Misconduct.
- For the purposes of calculating a student's revised final grade, the grade obtained in a supplementary examination replaces the grade earned for the original examination for the calculation of the final course mark.
- The maximum grade for a course in which a supplementary examination has been written is the passing grade for the course.

18. GRADUATION

The Marine Institute holds its annual graduation ceremony each year in June for all students graduating from advanced diploma, technology diploma, technician diploma and certificate programs. Students completing their program requirements and expecting to graduate from the Marine Institute must submit an Application to Graduate to the Office of the Registrar by the published deadline. Candidates must meet the following requirements in order to be approved by the Marine Institute Academic Council to graduate from the Marine Institute:

- have a minimum cumulative average of 60%,
- have passed all courses in his/her program,
- have obtained a minimum of 50% of the credits for their program at the Marine Institute

19. APPEALS POLICY AND PROCEDURES

The Appeals Committee of the Marine Institute Academic Council provides an objective review of students' cases.

This Committee considers student appeals of the application of Institute Academic Policies and Regulations.

The purpose of this section is to outline the procedures by which appeals may be made and to ensure that students are given advice that will allow them to make the best possible case when preparing an appeal.

- The responsibility for making an appeal before the Appeals Committee of Academic Council rests with the student.
- Student Appeals should be directed in writing to the Registrar who is Chair of the Academic Council Appeals Committee
- Reasons for initiating an appeal before the Appeals Committee of Academic Council include the following:
 - i) medical problems
 - ii) bereavement
 - iii) other acceptable cause
- Students should prepare as strong a case as possible. It is therefore recommended that students seek advice when preparing their appeal. Such advice can be obtained from a variety of sources:
 - i) The Office of the Registrar for the appropriate regulations and appeal procedures.
 - ii) An advisor or facilitator to assist in preparing their appeals, such as:
 - faculty member
 - a counselor
 - designated faculty, who have made themselves familiar with the appeals process and who are willing to undertake the role of student advisor or facilitator
 - the Marine Institute Student Union (MISU)
- A student submitting an appeal must present to the committee a personal letter including reasons for the appeal. Students must present independent evidence to corroborate statements made in the letter of appeal. Preferably, this evidence will come from a professional, such as a doctor, a counselor, a lawyer or a professor. However letters from other knowledgeable parties may be acceptable.
- In cases where an appeal is made on medical grounds, medical notes must be sufficiently specific to allow appropriate consideration of the student's case. The note must also clearly state that, in the opinion of the doctor, the problem was serious enough to have interfered with the student's work. The Institute requires that all medical notes be on letterhead, be signed by the physician and include details on the following:
 - i) confirmation of the specific dates on which the student visited the doctor.
 - ii) the degree to which the illness (or treatment, in the case of medication, for example) is likely to have affected the student's ability to study, attend classes, or sit for examinations.
 - iii) the length of time over which the student's ability was likely hampered by the medical condition (e.g. recurring and

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severe back pain over a two month period would likely have a more adverse effect on studies than a single episode of back pain requiring bed rest for a week.)

- iv) the fitness of the student to resume studies (it is in the student's best interest not to return to his/her studies prematurely.)The Institute respects the privacy of all students and, therefore, the confidentiality of all material contained in medical notes.
- Students claiming bereavement as grounds for an appeal must provide proof of death and evidence of a close personal relationship between themselves and the deceased.
 - The members of the Appeals Committee do require substantial information about the reasons for the appeal in order to make their decisions. However, the committee also recognizes the student's rights to confidentiality. With this in mind, a student may discuss the reasons for his or her appeal with the Institute counselor, who, with the student's permission and provided sufficient reasons exist, may then write a letter to the committee confirming that there were sufficient grounds for an appeal without disclosing the special personal and confidential details of the case.
 - In cases where a student wishes to appeal a decision of the Appeals Committee of the Marine Institute Academic Council, the appeal shall be directed to the Executive Committee of Academic Council. The Executive Committee shall determine if there is any further evidence or grounds to amend the previous decisions of the Appeals Committee.
 - In all cases, written appeals must be made no later than two weeks after the decision of the Appeals Committee is made known to the student. Failure to do so will result in the forfeiture of the right to appeal.

20. ACADEMIC MISCONDUCT

These rules on Academic Misconduct apply to students registered in courses in any non-degree Marine Institute program. Students enrolled in the degree-level courses should consult the Memorial University Calendar for regulations governing undergraduate and graduate degree students.

20.1 General Procedures

20.1.1 Reporting Offenses:

The Marine Institute values academic honesty highly. When any member of the Marine Institute community (faculty, staff, student) has reason to believe that an academic offense has been committed, he/she is obliged to report the matter verbally without delay to the appropriate person immediately.

In the case of a final examination, the appropriate person shall be the chief invigilator. In the case of a classroom test, assignment, project, or other academic work, the appropriate person shall be the person for whom the work is being done or the person supervising the work. The person for whom the work is being done shall take immediate action to stop the offense, if possible. He/she shall promptly inform the student's School Head of the offense and the action taken.

In the case of a final examination, the report shall be made to the Supervisor of Examinations who will prepare a report to the

appropriate School Head once the circumstances of the matter have been determined. A verbal report shall be confirmed in writing as soon as possible.

All references to School Head in this policy refer to the Head of the School with responsibility for the program of study in which the student accused of academic misconduct is registered.

20.1.2 Resolution of Allegations:

1. In the case of work, other than final exams, which constitutes less than 10% of the final grade for the course in question, an instructor may determine that a student may be guilty of either cheating or plagiarism. Such an offense shall be considered a minor offense. In such cases, an instructor may apply a grade reduction penalty up to and including the reduction of the grade for the portion of work in question to 0%. In such cases, the instructor shall submit a brief written report to the School Head documenting the nature of the incident, the evidence used to determine that the student cheated, and the action taken to resolve the issue. For minor offenses, an instructor may choose to have such incidents of alleged academic misconduct resolved by the student's School Head. In all cases other than those resolved in step one above, the faculty member, witness to the event or, in the case of final examinations, the Supervisor of Examinations, shall prepare and submit a written report to the School Head.

2. The School Head shall interview each person involved separately to establish the facts of the matter and the appropriate steps to follow. Those to be interviewed shall include the student(s) in question, the instructor for the course in question, the witness to the act of academic misconduct, and, in the case of final examinations, the Chief Invigilator and the Supervisor of Examinations. All interviews and the review of all documentation shall be completed and a decision shall be made by the School Head within ten (10) business days of the occurrence of the alleged offence.

3. If upon completion of step 2 above the School Head determines that there is not enough evidence to determine that a student is guilty of an act of academic misconduct, the matter is resolved and the student and instructor are notified in writing of the outcome.

4. If, upon completion of step 2 above, the School Head determines that there is enough evidence to determine that an act of academic misconduct was committed by a student, he or she will assess the circumstances and severity of the act of dishonesty and apply the appropriate penalties, as outlined below in the section concerning Penalties. The School Head shall notify the student in writing of the outcome of the case within five (5) business days of his/her decision.

20.2 Academic Offenses

Students who commit acts of academic misconduct, including but not limited to the following offenses, shall be subject to disciplinary action by the Marine Institute.

20.2.1 Cheating:

For assignment, tests, projects, reports, laboratories and examinations, cheating means copying from another student's work, or allowing a student to copy from one's own work;

consulting with unauthorized persons during a test or examination; or using unauthorized notes, books, manuals, or equipment during a test or examination.

Impersonating Another Student or Allowing Oneself to be Impersonated:

Impersonation for these purposes means the imitation or substitution of one person for another for the purposes of writing an examination or undertaking other academic work.

20.2.2 Plagiarism:

Plagiarism is the act of presenting the ideas or works of another as one's own. Under copyright law in Canada, all such items (writings, photos, videos, handwritten notes, etc.) are the property of the originator, even if not formally inscribed with the copyright symbol. This applies to all material such as essays, laboratory reports, work term reports, design projects, seminar presentations, statistical data, computer programs and research results. The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without acknowledgment, however, is contrary to accepted norms of academic behavior

20.2.3 Theft of Academic Materials:

Theft means the obtaining or possession of, by any improper means, examination papers, tests, or any other materials used in the evaluation of students.

20.2.4 Use and/or Distribution of Stolen Materials:

This refers to the use and/or distribution of materials which the student knows have been improperly obtained.

The student shall be given a period of two weeks from the date of receiving the letter in which to make an appeal before the Executive Director's final decision is made.

20.3 Penalties for Academic Misconduct Offences

Penalties resulting from acts of academic misconduct, as previously defined, may be taken from the full range of penalties available including reprimand, probation, grade reduction, suspension or expulsion. A description of each form of penalty can be found below. However, conviction for certain offenses shall automatically invoke penalties as follows:

OFFENSE	PENALTY
Theft of academic materials.	Expulsion
Possession, use, and/or distribution of stolen academic material.	Expulsion
Giving false information to gain entrance to the Institute.	Expulsion
Impersonation	Expulsion
Any other case of academic misconduct relating to a test, assignment, lab semester period, or semester report, which constitutes 10% of more of the final course grade.	Reduction of Grade
Any other case of academic misconduct relating to a final examination	Reduction of Grade, Probation and/or Suspension
Any other case of academic misconduct relating to two or more final examination	Reduction of Grade and Suspension

Any or all acts of academic misconduct may result in a student being placed on probation with the Marine Institute, a reprimand, or suspension from the course. Multiple offenses of Academic Misconduct may result in a more severe penalty being applied.

20.3.1 Submitting False Information:

Submitting false information includes, but is not limited to, the submission of false data, medical records, credentials, and misleading or incomplete information.

20.3.2 Submission of the Same Material for Two or More Courses:

This refers to submitting work for one course or work term which has been, or is being, submitted for another course or work term at this or any other institution without express permission to do so.

20.3.3 Academic Mischief:

Academic Mischief means any activities, other than those specified above, which in any way jeopardize the academic integrity of the Institute. This includes, but is not limited to, tampering with examinations, gaining unauthorized access to examinations, removing materials from the examination room, and the like.

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20.4 Description of Penalties

20.4.1 Reprimand:

A reprimand shall take the form of a written warning from the School Head informing the student that his/her academic conduct has been unacceptable to the Institute..

20.4.2 Reduction of Grade:

A reduction of grade penalty shall be imposed as follows:

- (a.) On materials such as tests, assignments, labs, and similar semester work accounting for less than 25% of total mark; the student shall be awarded 0% for the work under consideration.
- (b.) For semester reports, term projects including drawings, technical reports and other academic work which constitutes 25% or more of the total mark for a course; the course mark shall be 0%.
- (c.) For final examinations; the course mark shall be 0%.

20.4.3 Probation:

The period of probation shall be from the time of conviction to the end of two academic semesters beyond the semester in which the offense took place. In no instance will the period of probation exceed three academic semesters for any one offense. A student who commits a second offense while under probation may be suspended or expelled upon the recommendation of the Executive Committee of the Marine Institute Academic Council.

20.4.4 Suspension:

A suspension may apply to a course, program, or the Institute. The length of the suspension shall be determined by the Executive Committee of the Marine Institute Academic Council and shall be conveyed to the student in writing by the Chair of Academic Council.

In no case shall the length of the suspension for any single offense exceed three academic semesters.

20.4.5 Expulsion:

Expulsion shall mean that the student is required to withdraw from the Institute. Students who have been expelled shall not be permitted to re-enter the Institute.

The recommendation for expulsion shall be made to the Executive Director for his/her final decision. Prior to the Executive Director's decision, the Registrar shall notify the student in writing of the recommendation for expulsion.

The student shall be given a period of two weeks from the date of receiving the letter in which to make an appeal before the Executive Director's final decision is made.

20.5 Application of Penalties

A student who has been found guilty of academic misconduct shall be subject to a penalty or penalties in keeping with the seriousness of the offense. Conviction of certain offenses shall involve automatic penalties as outlined above.

The Registrar shall be responsible for the enforcement of penalties resulting from the above procedures. In some cases more than one penalty may be imposed for the same offense. Previous academic misconduct will be taken into account in determining the penalty or penalties.

In all cases where a student has been convicted of academic misconduct and there is a record on file with the Registrar, the students shall be disqualified for scholarships based upon work completed during the academic year in which the offense took place.

If a student receives a mark of 0% for any academic work as a result of academic misconduct, where this is on file with the Registrar, the student shall not be permitted to write a supplementary examination in the course concerned.

20.6 Right of Appeal

In accordance with Marine Institute policy and procedures regarding Student Appeals, a student has the right to appeal a decision concerning his or her involvement in an alleged case of academic misconduct.

In cases where the matter was initially resolved by an instructor, appeals shall be made to the student's School Head. In such cases, the School Head shall initiate action as per step 2 above under "Resolution of Offenses".

20.7 Disposition of Documentation

Documents relating to allegations under these procedures shall be disposed of as follows:

20.7.1 Allegations Not Supported:

In cases where the allegation was not supported, no documentation shall be retained.

20.7.2 Allegations Supported and Resolved by Instructor:

In cases where a minor offence is resolved by an instructor, documentation regarding the incident shall remain with the School Head. Documentation of the offence may be reported to the Registrar. This shall not be recorded in a student's file or on a student's transcript. It will be used to apply the appropriate scholarship or supplementary examination regulations for the term in which the offense was committed.

20.7.3 Allegations Supported and Resolved by School Head:

In cases where the allegation is supported and resolved by the School Head documentation regarding the incident shall remain with the School Head. In all cases but minor offenses, the Registrar shall be notified of the student's name and the offence including the course title, the nature of the offence, and the penalty imposed. For minor offenses the Registrar may be notified. Correspondence between the School Head and the student shall be copied to the Registrar as well. Records regarding the offense shall be retained in the student's file.

20.7.4 Allegations Resolved Through Appeal:

In cases where a student appeals the determination of their guilt or the application of a penalty regarding a case of academic misconduct, all documentation regarding the case shall be garnered from the School Head. In the case that an appeal results in the reversal of a previous decision, all previous documentation shall be destroyed by the School Head and the documentation of the case in question shall remain with the minutes and records regarding the appeal. In the case that an appeal results in a previous decision being upheld, all documentation obtained from the School Head shall be returned and a copy retained with the records regarding the appeal. The record of the offence, the appeal and the outcome of the appeal shall be retained in the student's file.

20.7.5 Transcript Entries

Transcript entries related to the penalty(ies) imposed shall be as follows:

PENALTY	ENTRY
Reprimand	No entry.
Reduction of Grade	Final grade for course.
Probation	On probation at the Institute for academic misconduct until Day, Month, Year. *
Suspension	Suspended from course/program/ Institute for academic misconduct until Day, Month, Year. *
Expulsion	Expelled from the Institute for academic misconduct.

* These entries are removed upon the expiry of the period of Probation or Suspension. The onus is on the student to ensure that the entry is removed at the appropriate time.

21. GENERAL GUIDELINES FOR FORMAL WORK TERMS

The Marine Institute offers a number of programs which include formalized work terms which are required in order to successfully complete the program of study and be eligible for the related diploma or certificate. The Institute has general guidelines governing work terms which are provided below. There are also work term regulations specific to each program. These are considered as course regulations which are provided to students separately.

21.1 Status

While on work terms, students are considered to be full-time students. All Marine Institute academic policies and regulations governing full-time students apply to students completing work terms.

21.2 Fees

Students entering work terms in Diploma of Technology and Advanced Diploma programs are required to pay a fee equivalent to the fee for one course for that student in that program at the time of registration. Please refer to the section concerning Fees and Financial Information for further details.

21.3 Registration

Students are permitted to conditionally register for a work term during the last week of classes of the preceding academic semester. This registration is conditional upon the completion of the preceding academic semester in which the student is enrolled and confirmation of the completion of any required prerequisites. Students who are required to withdraw at the end of the preceding academic semester are not eligible for placement in the work term and the conditional registration will be cancelled.

21.4 Placement

21.4.1 Placement Services and Coordination

All placements for work terms are coordinated jointly through the appropriate school and the Placement Office which assists employers and students in the selection process. The Institute does not guarantee placement. However, every effort is made to obtain adequate numbers of positions for students embarking on work terms. Please refer to the Student Services section for further information concerning the Placement Office.

21.4.2 Students Required to Withdraw from Programs

If a student is required to withdraw from a program, the Institute will not place the student until he/she has been reinstated in the program.

21.4.3 Self Placement

Students may secure their own placements provided they consult with the Placement Office. It is critical that all such placements are discussed with the Placement Officer and prior approval is obtained from the appropriate School before accepting a work term position with the intention of fulfilling the work term requirements of any specific program. Failure to receive prior approval may jeopardize the student's academic status and the eligibility of the work completed for recognition as meeting work term requirements.

Students in School of Fisheries programs, who are unable to secure a work term placement are required to do a research project. The project must be approved by the School Head and supervised by a faculty member. A research project is not an option for students in any other School of Maritime Studies programs.

21.5 Evaluation

All students on work terms are required to complete a project as specified by the respective School. Written project reports or completed "Sea Training Manuals" must be submitted to the appropriate Program Chair prior to the registration date for the next academic semester. These reports and manuals are evaluated by the Program Chair or designate.

Evaluation of a student's work term performance is based on the employer's report and either the written project report or the Sea Training Manual. Each is evaluated separately. The specific evaluation scheme for each work term is outlined in the course regulations for that work term.

On-the-job performance is assessed by written documentation from the employer and, where necessary, a meeting between the employer and an Institute representative.

ACADEMIC POLICIES AND REGULATIONS

21.6 Advancement

Students are required to obtain a minimum overall passing average as specified by the appropriate School and the requirements of each respective work term. However, in all cases, a student must obtain no less than 50% in each of the appropriate evaluation components (Sea Training Manual, project report, employer's assessment) in order to advance. Students who fail to honour a placement, leave before the agreed upon termination date, or perform in a manner which causes the employer to terminate employment, shall be deemed to have failed the work term.

21.7 Repeating Work Terms

Students who do not achieve the required grades, or fail a work term for any reason, are required to repeat the work term in order to earn credit for that component of the program. A student is permitted to repeat a given work term only once. Failure to pass on the second attempt means that the student must then withdraw from the program. A student may not repeat more than one work term for the entire length of the program.

Students who fail a work term are required to withdraw from the Marine Institute for at least one academic semester.

The period of withdrawal will be considered to be the academic semester immediately following the scheduled date of return to the Institute following the work term.

21.8 Reporting of Results

Work Term evaluation results are recorded as either Pass (P) or Fail (F) on the student's transcript. No grade value is recorded on a student's transcript.

21.9 Scheduling

Work terms are scheduled differently for each program. Students are expected to complete the work term(s) at the appropriate time(s). Alterations to the schedule or exemptions can be made only on the basis of exceptional circumstances and with **approval from the School**. All requests for exemptions or alternatives along with supporting documentation (medical forms, etc.) must be submitted in writing to the Registrar.

21.10 Specific Programs

For information on the application of these general regulations to specific programs, please consult the detailed program listings.

- 43** ABC's of On-Campus Services
- 47** Fees and Financial Information
- 51** Scholarships and Awards



BOOKSTORE

The Bookstore is located in the Main Lobby of the Institute, to the right of the main stairwell. Hours of operation are Monday to Friday 8:30 am to 4:00 pm.

The Bookstore has all the required textbooks for the courses offered, plus other related reference material. The Bookstore also stocks supplies required by students, such as; notebooks, paper, writing instruments, binders, report covers, calculators, and drafting supplies.

The Bookstore offers an extensive line of gift and clothing items which carry the name or logo of the Institute such as sweatshirts, t-shirts, hats, back packs, coffee mugs, desk clocks, and pen sets. Other gift items include Newfoundland postcards and matted prints.

General Refund Policy

Full refund will be given on all regular merchandise provided the item is returned within ten days of purchase date and accompanied by the receipt.

Text books must be in mint condition (not marked, bent, or ripped). All clothing must be in original condition (not worn, or washed, and tags attached if possible). Shrink wrapped items or tapes and CD's must be intact in their wrapping.

Contact Information:

Marine Institute Bookstore
155 Ridge Road
Box 4920
St. John's, NL.
A1C 5R3

Tel: (709)778-0473

Fax: (709)778-0672

E-mail: bookstore@mi.mun.ca

CHILD CARE

The Institute does not have its own child care centre. The University operated a child care facility located next to Burton's Pond on the St. John's campus. Further information is available from the centre.

Campus Childcare Inc.
Memorial University of Newfoundland
St. John's, NL
A1C 5S7

Contact: Tracy Rose
Executive Director

Tel: 864-4728
Fax: 864-2693

www.mun.ca/childcare

E-mail: childcare@mun.ca

A number of privately run centres are located throughout the city and may be conveniently located for some students. Further information is available from www.gov.nl.ca/cyfs/childcare.

COMPUTER FACILITIES/RESOURCES

The Marine Institute provides computer laboratories to be used for instruction, course work and assignments. These facilities are fully net worked and permit students to operate all software applications required for their course work. These rooms are available during normal working hours when classes are not in progress as well as at scheduled times after hours. Printing and plotting is provided on a fee per page basis, funds are transferred to the printing software using the Smart Card system.

Accounts are issued to new students at the beginning of each semester. Returning students will have their accounts renewed upon confirmation of registration. Please see University Single Email for students and Employees policy at <http://www.mun.ca/policy/site/view/index.php?Single> E-Mail for Students and Employees for further information.

While using these facilities, students are expected to adhere to the regulations governing computer facility usage for all individuals accessing Marine Institute computer systems and services. The regulations are provided in the Calendar section Institute Rules under Academic Policies and Regulations. Failure to do so may result in a loss of privileges or further disciplinary action in accordance to the Code of Disciplinary Procedures for Students. Violations of some policies may constitute a criminal offence.

FOOD SERVICES

The Marine Institute's Cafeteria is located on the lower level offering a panoramic view of the city of St. John's.

The Cafeteria operates year round, offering a full complement of homemade foods at affordable prices. There is a four-week rotating menu consisting of a variety of homemade soups, salads, sandwiches, and hot meals. The Cafeteria also features new additions each semester with a focus on quality nutritious meals enjoyed by students and employees.

Hours of Operation

Monday – Thursday	8:00am – 4:00 pm
Friday	8:00 am – 2:30 pm

HARASSMENT/DISCRIMINATION

Members of the Institute community are expected to treat each other with respect. The Institute does not tolerate any activity which may be harassing or discriminatory or which promotes harassment or discrimination. Students who feel that they are the subject of such activity are urged to report the matter to Student Affairs. The Institute will endeavour to ensure that the matter is dealt with promptly under the university-wide policy. Students may also contact the university's Sexual Harassment Advisor directly at 864-2015 or the Sexual Harassment Office at 864-8199.

ABC'S OF ON-CAMPUS SERVICES

HEALTH INSURANCE

There are two health and dental plans for students, one for Canadian students and the other for international students. Students are normally covered under one or the other plan but not both.

Canadian Students

The Marine Institute Students' Union (MISU) offers students a health care plan which covers a portion of the cost of prescription drugs, dental services, eyeglass expense and other medical services. Participation in the plan is compulsory and fees are due at the time of registration. A family plan is available on request. A detailed description of the plans is available from the Student Council.

Students who are covered under a similar plan held by a parent or spouse may opt out of the plan by visiting the website at <http://studentplans.ca/u/18>. The opt out deadline for any given academic term is two weeks after the first day of lectures.

International Students

International students may be eligible for coverage through the provincial health care plan, MCP. Students should contact the International Student Advisor located in Corte Real, Room 1000A on the St. John's campus.

THE HELP CENTRE

The Help Centre, at W3023, provides academic support services. It is staffed by faculty who are able to offer assistance on an individual or small group basis. Students may be referred to the Centre by an instructor or they may drop in according to the course specific schedule.

HOUSING

Memorial University's Department of Housing, Food, & Conference services provides both on-campus and off-campus housing solutions for students of Memorial University, students on the St. John's campus and those studying at the Marine Institute.

On Campus

Institute students may in residence on Memorial's main campus located about three kilometers from the Institute. Students are able to avail of traditional residence hall dormitory style housing in Paton College or apartment style residences in Burton's Pond. Both residence facilities are serviced by the city's transportation system.

Visit us on line:

<http://www.mun.ca/hfcs/>

Off Campus

Memorial University's Off-Campus Housing Office can help students find off-campus housing in and around the St. John's area. As a convenience to students, the Office also maintains a directory of rental properties. Please note that the properties listed in the directory are neither endorsed nor approved by Housing, Food, & Conference Services.

DR. C.R. BARRETT LIBRARY

The Dr. C.R. Barrett Library is located on the main floor of the Fisheries and Marine Institute. It offers a comprehensive range of research material to students, faculty, and staff at the Fisheries and Marine Institute and the Engineering Technology Centre of the College of the North Atlantic, and to the Newfoundland marine industries.

The library collection supports study and research in Fisheries and aquaculture, marine technologies, nautical science, and the ocean environment. The collection includes significant holdings in engineering technology.

The Dr. C.R. Barrett Library homepage <http://www.library.mun.ca/mi/index.php> provides access to all in-library and electronic books, journals, media based materials and library research resources and services available to the Memorial University community. Also available are Marine Topics web pages where library staff has aligned library resources to Marine Institute programs of study and research centres.

Library staff are available for consultation either in-person or via the chat feature located on the library home page.

LOCKERS

Lockers are available to students at a cost of \$20.00 per year. At the end of the school year students are required to return their locks at which time they will receive a \$10.00 refund. Failure to return locks will result in loss of the \$10.00 refundable deposit. Locker rentals are available in the Bookstore.

OFFICE OF THE REGISTRAR

The Office of the Registrar provides a variety of services to support the development of students at the Marine Institute. The primary role of this office is to interpret, uphold and contribute to the development of the academic policies and regulations of the Marine Institute; to coordinate the admission and enrollment of students at the Institute; to provide information regarding Institute programs, policies and regulations and courses to applicants, students and others; and to receive, process, manage and report all student and academic records relating to Marine Institute programs and students.

This office provides the following services:

- The production and distribution of the Institute calendar and program information brochures.
- The application and interpretation of Marine Institute academic policies, regulations and procedures.
- The provision, receipt, review of, and response to, applications for admission for all Marine Institute programs.
- The receipt and coordination of applications for transfer of credit from other institutions to the Marine Institute.
- Registration for students in programs and courses.
- The receipt and coordination of Course Audit applications.
- The provision and updating of student identification cards.
- The receipt and processing of changes to student registration information including course changes and student withdrawals.

- The processing of changes of address for students.
- The evaluation of deferred and supplementary examination applications.
- The coordination and supervision of final examinations including deferred and supplementary examinations.
- The receipt and coordination of challenge examination applications.
- The coordination of the review of, and response to, student academic appeals.
- The coordination of the Institute's response to reports of academic misconduct.
- The coordination of enrollment for Transport Canada certification training.
- The receipt, processing and reporting of end of term grades.
- The provision of official student transcripts.
- The receipt and evaluation of applications for graduation.
- The provision of student certificates and diplomas upon verification of completion of program requirements.

The Office of the Registrar may be contacted for further information on programs or any of the above services as follows:

Phone: (709) 778-0488 or 1-800-563-5799 (ext. 488)

Fax: (709) 778-0322

E-mail: admissions@mi.mun.ca

Web Site: www.mi.mun.ca

PARKING

Students who wish to park on campus must obtain a parking permit. Parking permits will be sold during registration and may be purchased after registration at the Cashier's Office. All students must complete an Application for Parking Permit form which is available on line. Memorial University parking regulations apply to the Institute and students are advised to obtain a copy from Security or Marine and Technical Services. Tickets are issued for traffic and parking violations and must be paid at the Provincial Traffic Court.

RECREATION AND FITNESS

A large, well-equipped, modern gymnasium, exercise room, weight room, change and shower rooms are available for physical and recreational activity.

There is a wide variety of intramural activities for both students and staff. These activities include softball, floor hockey, basketball and volleyball.

Information about these activities is available from the the Health and Wellness Coordinator.

The following policies and procedures apply to the recreational facility:

- Only non-marking shoes will be permitted on gym floor.
- Equipment must be returned to office when group is finished.
- Any abuse of facility or equipment will not be tolerated.
- Student I.D. must be presented in order to use facility equipment.

SPECIAL NEEDS STUDENTS

The Marine Institute does offer support services for students with special needs in accordance with Memorial University's Policy Accommodations for Students with Disabilities. Students should discuss their needs with Student Affairs personnel prior to the start of a term so services can be in place when the term starts. Appropriate documentation is required in order to avail of support services.

STUDENT AFFAIRS

Student Affairs offers services for students and prospective students. Services offered include:

- Academic and personal support
- Career, student aid, and scholarship information
- Transition and engagement programming
- Advising and assisting Student Council and other student groups on campus.
- Consulting with outside agencies regarding Institute programs.
- Advising individuals who may be interested in attending the Institute.

STUDENT PLACEMENT

The main function of the Placement Office is coordinating student work term employment in various programs offered by the Marine Institute. As well, additional services are offered to students and graduates through the Placement Office which include:

- Job Posting - Individual jobs are posted on a bulletin board.
- Resume Referral Service - Resumes of qualified candidates are collected and forwarded to the employers.
- On Campus Recruitment - Office space and board rooms are available to employers who wish to conduct interviews with students on campus.
- Employment Programs - Information on student and employer subsidy programs is available.
- Employer Database - A database of companies employing Institute graduates/students is maintained.
- Employer Resource Files - An employer file containing company information, annual reports, and applications for employment is available.
- Resume File - An up-to-date file of student and graduate resumes are made available to employers.
- Job Search Techniques - Students are assisted with cover letters, interview techniques, and resume preparation.
- Program Promotion - Institute programs are promoted to employers and graduate and work term placements are sought.

STUDENT UNION

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 student's 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 provides 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.

Elections for the Student Union Council are held during the year. All students are encouraged to become involved by running for a position and voting in the elections. Council members receive an honorarium for their involvement.

TRANSPORTATION

Bus

The Institute is on several regular Metrobus routes. Special buses run in the early morning and late afternoon to facilitate students getting to and from classes. There is also an evening bus service. Schedules for the current term are posted near the main entrance of the Ridge Road Campus.

The fees and charges indicated herein are as of the date of printing. The Marine Institute reserves the right to make changes to the regulations, fees and charges listed below. Any questions concerning fees and charges should be directed to the Marine Institute Cashier's Office on Ridge Road in St. John's.

Tuition Fees:

Tuition for Technician Diploma and Diploma of Technology programs for Canadian citizens is \$173.00 per course to a maximum of \$690.00 per term. International students are assessed a tuition fee of \$519.00 per course to a maximum of \$2070.00 per term.

Technical Session fees for Canadian students are \$173.00 per course to a maximum of \$345.00. For International students Technical Session fees are \$519.00 to a maximum of \$1035.00

Tuition for Advanced Diploma programs for Canadian citizens is \$345.00 per course to a maximum of \$1380.00 per term. International students are assessed a tuition fee of \$690.00 per course to a maximum of \$2760.00 per term.

Students entering work terms in Advanced Diplomas and Diplomas of Technology must pay a fee equivalent to the fee for one course upon registration for that work term. The exceptions include the Marine Engineering and Nautical Science work terms which are equivalent to two courses paid one time in the first work term.

Tuition fees for all other programs can be obtained from the Office of the Registrar. Students sponsored by Human Resources & Labour and Employment (HRLE) should also contact the Registrar.

Sponsorship:

Students who will be in receipt of sponsorship by an employer, HRLE or any other agency are responsible for the payment to the Marine Institute of all related tuition and other fees in accordance with the fee payment policy. In cases where a sponsor wishes to be invoiced by the Marine Institute for tuition or other fees, written notification must be provided from the sponsor on or before the day that fees are due to be paid. Such notification must state which fees, and to what amount, will be paid on the students behalf.

Laboratory Fee:

First year students are required to pay a non-refundable Laboratory Fee of \$25.00 upon registration in term 1. All other diploma (other than MESD and NA) students are required to pay a non-refundable Laboratory fee of \$5.00 at registration. Advanced Diploma students are required to pay a \$250 laboratory fee per term.

The Marine Engineering Systems Design and Naval Architecture programs are computing intensive. Students will be provided with a state-of-the-art laptop computer starting in the second year of the program. This laptop will enable you to work on projects and to access the network (Internal or Internet) 24 hours per day/7 days per week for the duration of the program.

Participation in this arrangement is mandatory for all students enrolling in the Naval Architecture and Marine Engineering Systems Design Programs.

Students entering the second year of the Marine Institute technology diplomas in Naval Architecture and Marine Engineering Systems Design must pay a Laboratory Fee of \$450.00 per term and \$225.00 per session.

Student Union Fees:

A Student Council Fee of \$30.00 (full time) or \$15.00 (part time) per term is compulsory. A Provincial and Federal Canadian Federation of Students (CFS) Fee of \$4.30 per term is compulsory. All fees are payable at registration.

Application Fees:

A fee of \$50.00 must accompany each application for admission to all Diploma, Advanced Diploma, and Certificate programs from any and all Canadian students.

Applicants who have attended a post-secondary institution outside of Newfoundland or who have Non-Canadian status must include a fee of \$100.00 for admission to all Diploma, Advanced Diploma, and Certificate programs.

Recreation Complex:

All students in Diploma, Vocational/Technical Certificate and Transport Canada Certificate programs have access to Memorial University's Recreation Complex. The mandatory fee for this is \$56.86 per term or \$28.43 per session.

Confirmation Fee:

A non-refundable, nontransferrable fee of \$150.00 is required from all applicants who are accepted or conditionally accepted for any program offered by the Marine Institute, except courses being offered by our Offshore Safety and Survival Centre. This fee ensures that you place is reserved in the program and is applied towards your tuition.

In order for a student to be assigned their seat for OSSC courses, the student must pay the full amount of the course up front. If a student is 100% sponsored by either a company or a funding agency, they must provide written proof of their sponsorship and their seat will be held. If a student is not 100% sponsored, the student must pay any portion of the fees not funded prior to being assigned a seat in the training course.

With 7 days written notice (prior to the start day of the course in which the student is registered) the student is eligible for a refund of all fees paid, less the \$150 confirmation fee. In absence of this notice, all fees are forfeited upon cancellation.

FEES AND FINANCIAL INFORMATION

Health And Dental Insurance:

The cost of health/dental insurance for Canadian students is \$150.48 per term and dependent coverage is available upon request at an additional cost per family of \$150.48 per term. International students should contact the Office of Student Affairs and Services for health/dental insurance information.

Students enrolled in another health/dental plan may apply to be excluded from the Marine Institute Student Union (MISU) plan by opting out online at <https://studentplans.ca/u/18> and provide proof of existing coverage. Acceptable proof will include, but is not limited to, the name of the company providing coverage, policy number, and specific reference to coverage. **Students must use their @wave.mi.mun.ca e-mail address when opting out as other e-mail address' will not be accepted.**

The opt out deadline for any given academic term is two weeks after the first day of lectures. Students who opt out of the health/dental plan in the Fall semester will automatically be opted out for the remainder of the academic year unless notification is made to the MISU to opt in.

The opt in deadline for any given academic term is two weeks after the first day of lectures.

Coverage under the MISU student health/dental plan is on the basis of academic year. Therefore, if any student chooses to opt out of the plan, they must do so at the beginning of each and every academic year.

If a student is on long term sea phase, they are automatically covered for health insurance only. If a student wishes to opt out of the health plan they must make the necessary arrangements. If the long term sea phase or work term begins before September 1st of any given year, it is the student's responsibility to make arrangements to opt out of the plan at the beginning of September, if they wish to do so. Students must opt out within the first two weeks of the scheduled start date of their work term for their program as published in the academic diary. If a student wishes to add on dental coverage they must fill out an opt in form during the first two weeks of lectures per academic term, which can be picked up at the MISU office.

In the case where a student has just completed a work term and is entering into a new academic semester and has opted out of the health care plan the previous semester, the student is also required to opt out of the dental plan for the new semester if they do not wish to have the dental coverage. The deadline for opting out of the plan is two weeks after the first day of lectures for that semester.

If a student is registered for courses at both the St. John's Campus and Marine Institute, they must opt out of both plans if they do not wish to have that coverage.

Methods of Payment

The following options are available for payment of fees to the Marine Institute:

Cash/Debit Card - Must be paid in person at the Cashier's Office. Do not mail cash.

Cheque - May be mailed or delivered in person to the Cashier's Office.

Credit Card – Effective December 31, 2013 VISA will disallow any credit card processing company in Canada from charging a convenience fee on Visa transactions. Therefore, as of January 1, 2013 MasterCard will be the only credit card accepted to pay online student accounts. **However, an agreement has been signed with Moneris Solutions whereby Moneris will provide the ability to pay for tuition fees online using your Master Card on Student Self Service. In exchange for this service, Moneris will charge students a convenience fee of 1.95%.**

Telephone or Online Banking – Customers of the Royal Bank of Canada, the Bank of Montreal, The Bank of Nova Scotia and Canada Trust who have access to the banks' telephone or online banking systems can pay their fees using this service up to the last day to add courses for each semester. Further information on the use of these banking systems can be obtained from your local branch

Tuition Voucher - Students receiving a tuition voucher must present the tuition voucher and pay the balance of any fees to the Cashier's Office by the published deadlines to avoid being assessed a late payment fee.

Student Loans:

Students enrolling in courses of 12 weeks or more in length may be eligible for Canada Student Loans.

For student loan purposes, the allowance for books is approximately \$500.00 per semester or \$1000.00 per year. For applicants from provinces outside Newfoundland and Labrador please contact the Student or Financial Aid office for your province. For further information concerning loan programs for students from Newfoundland and Labrador contact the Student Aid Branch of the Department of Youth Services and Post-Secondary Education as follows:

Internet: <http://www.gov.nl.ca/studentaid>
(Online applications and information)

E-mail: studentaid@mail.gov.nl.ca

Telephone: (709) 729-5849 (client service during business hours) or (709) 729-4244 or 1-888-657-0800 for automated information service

Facsimile: (709) 729-2298

Office: Coughlan College on the St. John's Campus of Memorial University -
Monday to Friday 9:00 A.M. to 4:30 P.M.
(4:00 p.m. during the summer)

Mail: Student Financial Services Division
Department of Youth Services and Post-Secondary Education P.O. Box 8700
St. John's, NL A1B 4J6

Students unable to meet fee obligations while awaiting a student loan must contact the Marine Institute's Finance Office on or before the date that fees are due to arrange for a deferral of payment. Once loan documents are received at the Marine

Institute, all fees owing will be signed out of the student loan unless the student wishes to immediately pay by another method.

Student Residence:

Students attending the Institute may apply for accommodation to:

*Manager of Accommodations
Housing, Food and Conference Services
309 Hatcher House
Memorial University of Newfoundland
St. John's, NL
A1B 3P7
phone: (709) 864 - 7590 or
e-mail: housing@mun.ca
Internet: <http://www.housing.mun.ca>*

All students are responsible for locating suitable accommodation for the duration of their studies.

Locker Fee:

Students wishing to obtain a locker will pay \$20.00. Ten dollars will be refunded at the end of the year provided the lock is returned in proper working order.

Challenge Exam:

A fee equivalent to the cost of one course is payable by students applying to earn credit in a Marine Institute course by way of a challenge exam. Further information regarding challenge exams is provided in the section regarding Academic Regulations.

Late Registration Fee:

The Registrar schedules the registration period and deadline for each term. Students are advised of this information. Students who fail to register before the registration deadline date will be assessed a basic late registration fee of \$20.00 as well as \$10.00 per day for each day beyond the deadline.

Students unable to register on their scheduled registration date due to a pending outcome of a supplementary exam, re-read of an exam, or verification of admission from the Registrar's Office will not be subject to a late registration penalty.

Supplementary Examination Fee:

A non-refundable supplementary examination fee of \$50.00 is charged for each supplementary examination that a student writes. This fee must be submitted with the application to write supplementary examination(s).

Re-of Examination Fee

A fee of \$50.00 is charged for each examination re-read. It is refunded only if the mark is raised. This fee must be submitted with the application for examination re-read(s).

Replacement of Certificate Fee:

A fee of \$30 is charged for a certificate replacement.

Replacement of ID Card Fee:

A fee of \$15.00 is charged for each replacement Student Identification Card.

Replacement of T2202a Fee:

An administration fee of \$10.00 is charged for each replacement T2202A (Educational Deduction Form).

FEE PAYMENT AND REFUND POLICY

Payment Term:

All fees are due once a student registers regardless of the method of registration and must be paid by the fee deadline to avoid a late payment penalty.

The payment deadline for students in diploma programs is the first day of lectures in the term including work terms. The deadline for students in certificate or industry-response programs or courses is the date of registration.

Students who do not comply with the above may have their registration cancelled at the discretion of the Marine Institute.

Deferral of Fees:

Students who have been awarded a scholarship, bursary, Student Loan or other similar award, may be permitted to have their payment deferred until they are in receipt of the award or Student Loan. To request such a deferral, the student must submit an "Application for Payment Deferral" before the first day of lectures in the term. This form is available from the Finance Office.

Finance Charges:

Accounts outstanding on the last day of examinations in a semester/session will be charged interest at the prime interest rate plus two percent per annum. Such interest will apply effective the first day of lectures in that semester.

Late Payment Penalty:

Except as outlined in this policy, all overdue accounts will be subject to a late payment penalty. The late payment penalty is \$15.00 per course up to a maximum of \$60.00 per term or session.

Outstanding Fees:

Student accounts with outstanding balances for any reason will be ineligible to register for a subsequent semester until the outstanding balance has been paid in full by cash, certified cheque or money order.

Student accounts with outstanding balances will not be awarded diploma or certificate, and will not be issued an academic transcript of marks or letters confirming graduation status until the outstanding balance has been paid in full by cash, debit card, credit card, certified cheque or money order.

Returned Cheque Charge:

A \$25.00 dishonored cheque charge will be made for each cheque tendered to the Marine Institute and not honored by the bank. A student with a dishonored cheque record must pay fees by cash, debit card, certified cheque, or money order.

FEES AND FINANCIAL INFORMATION

STUDENT FEES REFUND POLICY:

TUITION

Full Semester Programs:	Refund
in the first 11 days of class	100%
Day 12 to Day 16 of classes	50%
Day 17 to Day 21 of classes	25%
Day 22 and beyond	0%
Less than Full Semester Program	Refund
In the first 5 days of classes	100%
Day 6 to Day 8 of classes	50%
Day 9 to Day 11 of classes	25%
Day 12 and beyond	0%
Technical Sessions that are between 16 and 20 days	Refund
In the first 4 Days of classes	100%
Day 5 to Day 6 of classes	50%
Day 7 to Day 8 of classes	25%

STUDENT UNION & ALL OTHER COMPULSORY FEES

Full Semester Programs	Refund
In the first 11 Days of classes	100%
Day 12 and beyond	0%
Less than Full Semester Programs	Refund
In the first 5 Days of classes	100%
Day 6 and beyond	0%

NOTE:
No refund for programs 3 weeks or less

The Marine Institute scholarship program is made up of internally and externally administered scholarships. There are normally two scholarship presentations in an academic year; one in November and the other in March. The application deadline dates for the current academic year appear in the list of important dates printed at the front of the calendar.

Students must apply for scholarships each term. One application form covers all scholarships Marine Institute Committee on Scholarships. Students may be required to submit additional application forms to be considered for externally administered scholarships.

SCHOLARSHIP GUIDELINES:

These guidelines cover scholarships and awards administered by the Scholarship Committee of the Marine Institute Academic Council.

- An applicant must be a registered full-time student of the Institute for the current academic year and satisfy the general conditions outlined below. In addition, certain scholarships and awards have special requirements which also must be met.
 - For the academic year under consideration, applicants normally shall have taken a course load equal to or greater than that prescribed for their program. Students who take more than the normal course load shall have their average based on the courses actually taken. In cases where students take a reduced load, a maximum of a one course reduction for the entire academic year is allowed.
 - In any one academic year, a student normally shall be granted only one scholarship which is administered by the Marine Institute Scholarship Committee.
 - There is no limit on the number of external scholarships which a student may hold. For the purpose of these regulations, an external scholarship shall be deemed to be a scholarship that is administered or approved by an external committee (e.g. Ocean Ranger, Atlantic Accord, Master Mariners, etc.)
 - A scholarship or award normally is given to the eligible student with the highest marks. In the event of a tie, the following shall apply:
 - In the case where the students are taking an unequal number of courses, the student taking the larger number of courses shall be awarded the scholarship.
 - In the case where the students are taking an equal number of courses, the unrounded course marks shall be used and the student with the higher average shall be awarded the scholarship.
 - In the case where the unrounded averages are equal, every attempt will be made to award all students concerned with scholarships of equal value.
 - Entrance scholarships shall be awarded on the basis of the high school marks used to determine entrance eligibility.
 - First year students shall be awarded scholarships based on their performance in the first term.
 - Second and third year students shall be awarded scholarships based on their performance in the preceding year.
 - Students who have received a diploma of technology from the Institute and who are returning to receive another diploma of technology shall be eligible for scholarships provided that they returned to studies in the academic year immediately following the one in which they graduated. They shall be evaluated on the basis of their academic performance in the graduating year of their first diploma including any courses done as part of the new diploma.
 - Advanced diploma students shall be evaluated on the basis of their performance in the first term of their program.
 - Students entering the Bachelor of Maritime Studies and Bachelor of Technology programs shall be evaluated on the basis of their marks in the graduating year of their diploma program.
 - Transport Canada students shall be awarded scholarships and awards based on the recommendation of their faculty.
 - Certificate students in one year programs shall be evaluated on the basis of their performance in the first term.
 - Students in program of less than one academic year in length shall not be eligible for scholarships unless a scholarship is identified for their specific program.
 - Students must apply for scholarships, although the committee reserves the right to award scholarships to students who do not apply. Students who fail to apply may not claim any right of consideration by the Institute.
 - Students shall be required to have a minimum average of 70% for the academic year under consideration.
 - Students who write supplementary examinations in the year under consideration shall not be eligible for scholarships.
 - Students must have passed all courses in the year under consideration.
 - Where possible, marks will be correlated with scholarship value.
 - Awards given for performance in a specific area are based upon the recommendation from the school. As such, the nominee need not meet the overall minimum overall average requirement nor the course load requirement. The nominee must have been registered as a full-time student for the year under consideration.
 - Pass/fail courses completed as requirements for external certification (e.g. MED, First Aid, Radio Operator) shall not be calculated in the course load provided they were done as blocks and not concurrent with other courses.
 - Students in the diploma programs who are admitted to pre BMS or pre Btech may use courses from those programs to maintain the required course load for scholarships.
 - Students who have been convicted of an offence under the academic misconduct code are not eligible for scholarships.
- A number of the scholarships have additional specific requirements which must be met. The Scholarship Committee reserves the right to award scholarships to students who have not applied. However, students who do not apply may not claim any right of consideration by the Institute.
- From time to time special scholarship programs are offered by outside agencies. Notice of these scholarships is posted on the Student Affairs notice board outside Room 3307. Usually more detailed information and application forms are available from the Student Affairs Office, Room W3013.

SCHOLARSHIPS AND AWARDS

The Algoma Central Corporation Scholarship

One scholarship is awarded annually to a student beyond first year in both the Nautical Science and the Marine Engineering diploma of technology programs.

April Arnott Memorial Scholarship

This scholarship was established by the human resources department at Memorial University. The scholarship will be valued at a portion of the interest on the endowment and will be awarded annually. To be eligible, candidates must be enrolled full-time in the third year of the Marine Environmental technology program. Preference will be given to a candidate of any age who has demonstrated academic ability, high energy and compassion to others.

The Mr. Justice Fintan J. Aylward Scholarship

This scholarship, the yearly interest from an endowment established by the Honourable Mr. Justice Fintan J. Aylward, Q.C., (a former Chairman of the Board of the College of Fisheries, Navigation, Marine Engineering and Electronics and of the Marine Institute) is awarded to a student entering the first year of a diploma program at the Institute who has demonstrated an interest in marine law or marine safety.

Dr. C. R. Barrett Scholarship

This scholarship, the yearly interest from a \$5,000 trust fund donated by Dr. C. R. Barrett on his retirement as President of the College of Fisheries, Navigation, Marine Engineering and Electronics, will be awarded to a deserving Diploma of Technology student.

The John N. Barrett Scholarship

This scholarship, the yearly interest from a \$2,000 trust fund to be awarded to a deserving diploma student who plans to continue his/her studies at the Institute, was donated by Dr. C. R. Barrett in memory of his father.

The Raymond Bartlett Memorial Scholarship

This scholarship, the interest from an endowment in memory of a former student, is presented in alternate years to a student in second or third year of the Marine Engineering program or the MOT Engineering program who has demonstrated high academic ability and a strong sense of initiative and perseverance.

John Butt Memorial Scholarship

This scholarship given by the St. John's Philatelic Society in memory of John Butt is awarded to a student continuing his or her studies at the Institute.

The Ed Bowdring Memorial Scholarship

The scholarship was established by the friends and colleagues of Ed Bowdring as a memorial to an exceptional photographer who has left a valuable photo record of the people of the land and the sea. This scholarship, the interest from a trust fund, is awarded to a student who demonstrates a creative use of video or still photography as part of his or her studies, or develops an innovative media-related project for the benefit of rural Newfoundland and Labrador.

Heber Bowring Memorial Scholarship

This scholarship, the yearly interest from a \$5,000 trust fund, will be awarded to a student in Engineering Technology.

Canadian Federation of University Women - St. John's Club Scholarships

These scholarships are awarded to women whose studies are leading to a career in a non-traditional working area for women.

The Captain Lloyd Bugden Memorial Scholarship

This scholarship in memory of the late Captain Bugden is awarded to a student in either the second or third year of the Nautical Science diploma program.

Centenary of Responsible Government Scholarships

These scholarships sponsored by the Government of Newfoundland and Labrador are awarded to the two students who obtain the highest marks in a three year technology program.

Corey Eddy Memorial Scholarship

The Cory Eddy Memorial Scholarship is named after Corey Eddy, a graduate of MI's Marine Engineering Systems Design program who passed away in the Cougar Flight 491 crash. Annually funded by family and friends through funds raised at the Corey Eddy Memorial Golf Tournament, Scholarship is awarded to a student beyond first year in the Marine Engineering Design program.

The Wayne Dalton Memorial Scholarship

This scholarships in memory of Wayne Dalton is awarded to a student in the second or third year of the Nautical Science or Marine Engineering Technology Program. Preference shall be given to a student from Baltimore High School.

Donald W. K. Dawe Memorial Scholarship

This scholarship comes from the yearly interest of a trust fund donated by the family, friends and associates of the late Donald W. K. Dawe, Q.C., the first chairman of the Board of Governors of the College of Fisheries, Navigation, Marine Engineering and Electronics. It will be awarded annually to a deserving student who has successfully completed at least one year at the Institute. Preference may be given to a student from rural Newfoundland and Labrador.

Donald W. K. Dawe Scholarship

This scholarship is awarded to a student who plans to continue his/her studies at the Institute.

The Frank Dopplinger Memorial Scholarship

This scholarship was established by the family of Frank Dopplinger former Chairman of the Fishing Industry Advisory Board, as a memorial of his contributions to the Newfoundland Fishing Industry. It is awarded annually to a student in a fisheries-related program based on academic performance.

Randy Emberley Memorial Scholarship

The Randy Emberley Memorial Scholarship, donated by his fiancée Jeanie Sutton, is given in memory of Randy Emberley, a former graduate of the Marine Institute who died tragically. This scholarship valued at \$200 is awarded annually to a student in Nautical Science, who is a native of Newfoundland.

The Captain Bill Ennis Memorial Scholarship

This scholarship in memory of Captain William (Bill) Ennis, a Marine Institute faculty member and prominent Newfoundland fishing captain, is given to a student in the Bachelor of Maritime Studies program who has completed the Nautical Science diploma program at the Marine Institute.

ESRI Canada GIS Scholarship

The ESRI Canada GIS Scholarship is a national scholarship given by ESRI Canada recognizing MI for a strong, multidisciplinary focus on Geographic Information Systems (GIS) in MI's new Joint Diploma/Degree in Ocean Mapping.

Charles Evans Memorial Scholarship

This scholarship, the yearly interest from an endowment by the family of Charles Evans, a former student of the Marine Institute, is awarded to a student in Nautical Science, upon the recommendations of the Head of the School of Maritime Studies.

Fish, Food and Allied Workers Scholarships

These scholarships are awarded to first year Food Technology students based on entrance average.

Friends of India Association Scholarship

Awarded annually to the student with the highest average in the institute by the Friends of India Association.

Flight 491 Legacy Scholarships

This scholarship is the yearly interest from an endowment thanks to investment from the Newfoundland and Labrador Oil and Gas Industries (NOIA), The Canadian Association of Petroleum Producers (CAPP), and the St. John's Oil Field Technical Society (OTS). Awarded to a student in the first year of a Diploma of Technology program.

Flotilla '97 Legacy Scholarship

This scholarship, the legacy of the 1997 flotilla to commemorate the 500th Anniversary of Cabot's voyage, is presented to a student entering the Bachelor of Technology Program. Preference shall be given to students from Marine Environmental Technology.

The Fry Family Foundation Marine Institute Bachelor of Technology/Maritime Studies Leadership Scholarship

These scholarships are awarded to Newfoundland and Labrador students entering either the Bachelor of Technology or the Bachelor of Maritime Studies program who have shown leadership in various community organizations while maintaining a strong academic performance. These scholarships are awarded by the Marine Institute Scholarship Committee.

The Fry Family Foundation Marine Institute Diploma of Technology Entrance Leadership Scholarship

These scholarships are awarded to Newfoundland and Labrador students entering diploma of technology programs who have shown leadership in various community organizations while maintaining a strong academic performance. These scholarships are awarded by the Marine Institute Scholarship Committee.

The Hector and Sybil Green Memorial Scholarship

The Hector and Sybil Green Memorial Scholarship was established by the Green family as a memorial to two people who had a long-time association with the fishery and who appreciated the value of education. It is awarded annually to a student in the Marine Diesel Mechanics program, who is not receiving other forms of financial assistance and is based upon academic performance and the recommendation of the selection committee.

Sidney Hann Memorial Scholarship

In memory of Sidney Hann a Marine Institute graduate and pioneer of the provincial and national fishery industry. The Sidney Hann Memorial Scholarship will be given annually to a full-time Newfoundland student enrolled in a program within the School of Fisheries at the Marine Institute.

Rose Hatfield Healthy Living Bursary

The Rose Hatfield Healthy Living Bursary is to be awarded annually to a student who demonstrates a high level of academic ability and dedication to healthy living. The bursary is in honour of Rose Hatfield, a recreation specialist at MI who has been committed to healthy living for over 25 years via her position at the Marine Institute and her involvement in activities across Newfoundland and Labrador.

The Harvey Head Memorial Scholarship

This scholarship is presented to a full-time student entering the Bachelor of Technology program who has graduated from the Electrical Engineering program at either the Marine Institute, Cabot College, or College of the North Atlantic and who has maintained a minimum of 70% average throughout the diploma program.

The Kjell Henriksen Scholarships

Two scholarships donated by the widow of the late President of the Canadian Saltfish Corporation, in memory of her husband, awarded annually to second and third-year diploma students and advanced diploma students in the School of Fisheries who are the sons and daughters of native-born Newfoundlanders.

The Hibernia Management and Development Company Ltd. Scholarships

These scholarships shall be awarded annually to one male and one female student in either the second or third year of the Marine Environmental Engineering Technology program.

The Dale Howse Memorial Scholarship

This scholarship is awarded to a student in a diploma of technology program who has demonstrated exceptional commitment to helping other students. It is based on the recommendation of the selection committee.

SCHOLARSHIPS AND AWARDS

Dale Howse, Sterling Perham, and Richard Price Memorial Scholarship

This scholarship in memory of three students is presented to a student enrolled in a technology program. Preference may be given to a student in the Marine Engineering program.

The Chester and Maud Keeping Memorial Scholarship

This scholarship, in memory of Chester and Maud Keeping who had a long association with both the marine and fishing industries and who valued education highly, is given to a student in either the second or third year of a technology program

Keith R. Kirby Scholarship

This scholarship, the yearly interest from a \$5,000 trust fund, to be awarded annually to a deserving Intermediate Student in Nautical Science of high academic achievement and who is recommended as having a commitment to improving safety in the marine environment.

The Labrador Scholarship

The Labrador Scholarship, the interest from an award presented to the Institute by Northern Telecom for its distance education program in Labrador, is awarded annually to a student from Labrador who is enrolled in a three year technology program.

Dr. Aidan Maloney Scholarship in Fisheries Resource Management

The Dr. Aidan Maloney Scholarship in Fisheries (Resource Management) was established through a generous gift by Dr. Aidan Maloney, who served the fishery of Newfoundland and Labrador in both the private and public sectors for almost fifty years. The scholarship will be given annually to a full-time graduate student enrolled in the Master of Marine Studies – Fisheries Resource Management program at the Marine Institute.

Marine Atlantic Scholarship

A total of four scholarships shall be awarded each year. Two shall be given to students in either second or third year of Nautical Science program and two shall be given to students in either the second or third year of the Marine Engineering program. Recipients shall be residents of either Nova Scotia or Newfoundland and Labrador.

Marine Institute Scholarship

This scholarship may be awarded to students in any program eligible for scholarships.

Marine Institute Science Fair Scholarships

The Marine Institute sponsors up to eight entrance scholarships to the Marine Institute. Up to two recipients may be selected from the Grade XI and XII entries in the senior division of each of the four Newfoundland regional science fairs. Recipients must enroll in the Marine Institute in the next academic year following graduation from high school in order to claim the award. Application must be made prior to the commencement of judging.

Marine Institute Student Union Scholarships

The Marine Institute Student Union has established four scholarships which are awarded on the basis of academics and involvement in student affairs.

Marine Institute Sustainable Aquaculture Scholarship

This scholarship is awarded to a student in the Advanced Diploma in Sustainable Aquaculture program and is based on academic performance in the first term.

Memorial University Entrance Scholarships

These scholarships are awarded to students entering the technology program based on high school academic performance.

Middle Cove Memorial Scholarship

This scholarship, established from the interest of an endowment by members of the Canadian Coast Guard in the Newfoundland and Maritime Regions in memory of three colleagues who lost their lives in the line of duty, is awarded annually to a second or third year student in Maritime Studies.

EXXON/Mobil Oil Canada Scholarship

This scholarship is awarded annually to a student with high academic performance.

Captain Wilfred B. Morgan Memorial Scholarship

Donated by his wife and children as a memorial to Captain Wilfred B. Morgan, Master Mariner, who served as a Master with C.N.R. and was a Master of the Institute's M.V. Beinir, this scholarship is awarded annually to a Nautical Science student entering second year. Preference shall be given to a student from the Labrador coast.

Ocean Choice International Scholarships (Entrance Scholarships)

These scholarships are awarded annually to students entering the Marine Institute.

Ocean Ranger Scholarships and Bursaries

To commemorate the tragic loss of the 84 crew members of the Ocean Ranger on Feb. 15, 1982, a scholarship and bursary program has been established by the Ocean Ranger Disaster Fund. These awards, valued at \$500.00 per year, are presented to students who are entering or pursuing a post-secondary program of studies. In selecting candidates, preference will be given to the daughters, sons and/or widows of those who were lost. In the absence of eligible candidates from this group, the scholarships and bursaries may be awarded to other students at the discretion of the Ocean Ranger Scholarship Committee.

The Oil and Gas Week Scholarship

This scholarship was established by the Oil and Gas Week Steering Committee in support of students in petroleum related programs. Based on scholarship standing, the scholarship will be awarded to a student beyond their first year of study, with preference given to students who graduated from a high school in Newfoundland and Labrador outside of the metropolitan St. John's area. To be eligible, the student must be enrolled in

a program in Nautical Science, Marine Engineering, Marine Engineering Systems Design, Naval Architecture or Ocean Instrumentation.

Pangeo Subsea Inc. Scholarships

This scholarship, established by PanGeo Subsea Incorporated, is awarded annually to one male and one female student in either the third or fourth year of a program in the School of Ocean Technology.

Captain Peter Parsons Memorial Scholarship

Donated by his wife and four daughters, the Captain Peter Parsons Memorial Scholarship commemorates a Newfoundland master mariner who knew the power of both the sea and education. The interest from the endowment is awarded annually to a student in either the second or third year of the Nautical Science Diploma of Technology program who is a native Newfoundlander or Labradorian or whose parents are natives of the Province.

Port of St. John's Scholarships

These scholarships were established by the St. John's Port Corporation to recognize the academic achievements of students studying in the marine fields. Preference shall be given to students in second and third year Nautical Science.

Canadian Association of Prawn Producers Scholarship

This scholarship will be awarded to a maximum of 3 students who are entering the Marine Engineering Diploma of technology program who are Canadian citizens. This scholarship is renewable for up to 3 years at a value of \$3000 per year. Students seeking renewal of the scholarship must remain in scholarship standing at the Institute.

The Professional Fish Harvesters Certification Board Scholarship

The scholarship is awarded to a certified fish harvester or a dependent who is entering the second year of a three-year diploma of technology program.

Gerald F. Pye Memorial Scholarship

This scholarship in memory of Gerald F. Pye, a former student, was established by his wife Cindy Power. It is awarded to a student in the third year of the Ocean Instrumentation program based on academic performance and demonstrated strong work ethic.

Vincent and Violet Raymond Scholarship

This scholarship is awarded annually to a second or third year Naval Architecture or Marine Engineering Systems Design student who has been recommended by his or her instructors as having demonstrated dedication and effort in his or her studies. The intent of this scholarship is to encourage good students though they may not be the top students in the class.

The Rotary Scholarships

Two scholarships shall be awarded to students entering their final year of studies. In selecting candidates for the scholarships, the Scholarship Committee will consider academic achievement, participation in Institute activities, and the demonstration of personal qualities appropriate to the student's chosen field of endeavour.

Hazen A. Russell Scholarship in Fisheries

Two scholarships, the annual interest from a \$25,000 trust fund, will be awarded to qualified second and third year students in fisheries and related marine technology. The trust fund is a donation by the family of the late Hazen A. Russell, who made a major contribution to the development of the Newfoundland fishing industry. These scholarships honour the memory of an outstanding businessman whose success was due in no small measure to his commitment to quality control and technical innovation.

Schlumberger Canada Limited Scholarships

These scholarships, 2 valued at \$2000 annually, are funded through Schlumberger Canada Limited, will be available to students in the Marine Engineering Technology, Naval Architecture, Marine Engineering Systems Design and the Nautical Science programs. Awarded on the basis of scholarship standing to residents of Newfoundland and Labrador. Scholarships will be awarded to women, aboriginals, and persons with disabilities or members of a visible minority.

The Captain Michael J. Simmonds and Arthur Simms Memorial Scholarship

This scholarship in memory of two gentlemen who had a long association with the shipping and fishing industries is awarded to a student in the Coastal Zone Management program.

The Telegraphist Gordon W. Noseworthy, RN Memorial Scholarship

This scholarship in memory of Telegraphist Gordon W. Noseworthy, Royal Navy, who died in action during the Battle of the Atlantic (1939-1945) while serving in HMS Stanley, is awarded to a third year Nautical Science student who has successfully completed the required radio and communications courses

J.J. Ugland Memorial Scholarships

Valued equally at a portion of the income on the endowment, The J. J. Ugland Memorial Scholarship, will be awarded to one marine engineering student and one nautical science student. The J.J. Ugland Memorial Scholarship is for first-year MI students and is renewable for one year if scholarship standing is maintained.

Xerox of Canada Scholarship

Awarded to a student of high academic standing.

SCHOLARSHIPS AND AWARDS

ADDITIONAL SCHOLARSHIPS

A number of external agencies provide scholarships for employees or members and their dependents. Students should make inquiries directly to the agency concerned. The following is a partial listing of scholarship sponsors:

- NAPE
- Knights of Columbus
- Royal Canadian Legion
- Korea Veterans Association
- Society of United Fishermen
- Newfoundland Light and Power Company Ltd. Employees Association
- Masonic Lodges
- Labrador Inuit Association
- The HUB
- Kinsmen
- Fishery Products International
- CUPE
- CNIB
- Imperial Oil
- National Sea Products
- Company of Master Mariners
- Scouts Canada
- Canadian Institute of Marine Engineering
- Netherwood Foundation
- Newfoundland and Labrador Amateur Sports Federation
- Grenfell Association

AWARDS:

The Gerard Butler Award

This award of marine reference books to the value of \$100 is to be presented annually to a qualified student of the Ministry of Transport Nautical Certificate program. This award comes from the annual interest of a memorial trust fund set up by Mrs. Anne Butler in memory of her late husband who was lost at sea when the Arctic Explorer sank.

Canadian Institute of Marine Engineers (Newfoundland Branch) Award

This award is given on recommendation of the Executive Director to the student most outstanding in practical and theoretical work with an average of not less than 75% at the end of the first year of training in Marine Engineering or Marine Engineering Systems Design.

Governor General's Bronze Medal

The Governor General's Bronze Medal is awarded at Graduation to the student who has the highest average in the final year of a three year program. Students must have carried a full academic load.

Marine Institute Bronze Medals

Marine Institute Bronze Medals, presented at Graduation, are awarded to students with the highest standing in the final year of their programs.

The Melvin Freid Marine Safety Award

Donated by Alpha Beta Sigma Phi in remembrance of Mel Freid who lost his life in the Ocean Ranger disaster. This award, valued at \$250 is presented annually to a student who shows initiative and enterprise in the field of marine safety or to assist in a research project in marine safety.

MARINE INSTITUTE ENTRANCE SCHOLARSHIPS SCHOLARSHIP OVERVIEW:

Eligibility Criteria

To be eligible for any Marine Institute Entrance Scholarship students must first meet all Marine Institute entrance requirements as outlined in the Marine Institute Calendar. MI Entrance Scholarship Average will be compiled from the grades received in the following courses:

- 2 English credits, 3rd Level English (3201)
- 4 Math credits, 2 from 3rd Level Math (Academic or Advanced) and 2 from 2nd Level Math (Academic or Advanced)
- 4 credits in Laboratory Science (2 credits must be a 3000 level course)
- 2 credits in a social science or classical language (must be a 3000 level)
- 2 credits at the 3000 level in an elective course (maybe from the courses listed above or additional courses approved by the Department of Education).

Scholarship Allocation

Students obtaining an average of:

- Between 80 and 84.9%
 - will receive a Marine Institute Entrance Scholarship valued at \$1000
 - Students will also be assessed in accordance with Memorial University's entrance scholarship program to ensure that they are awarded a scholarship if eligible.

Regulations

- Entrance scholarships are to be awarded in the Fall Semester.
- The MI entrance scholarships are open to Canadian citizens and permanent residents graduating from secondary school, who are admitted to the Marine Institute on the basis of high school grades and current entrance standards, and who meet the above outlined scholarship average. They are also open to students in the above category who may not be coming directly from high school. This is limited to those who have previously graduated from high school, are admitted to the Marine Institute on the basis of high school grades and current entrance standards, and who meet the above outline scholarship average.
- Students may receive only one internal entrance scholarship.
- Any student in receipt of an externally funded entrance scholarship is still eligible to receive a MUN or MI entrance scholarship.
- Students who have previously attended other post-secondary institutions public or private, transfer students or mature students are not eligible for MI entrance scholarships.
- A student who is awarded an MI entrance scholarship as a

new matriculant does have the option to apply to defer the scholarship offer for one year. To defer a scholarship, the student must provide written documentation in the form of a letter to the scholarship administrator. The letter must detail the reasons for deferring the scholarship. All applications are reviewed by the scholarship committee.

Awarding of Scholarship

- Scholarship payment will only be made after the last date to drop and add courses for that specific academic term as reflected in the proper academic diary.
- If a student drops below a full time course load in their first term of study, the scholarship offer will be revoked and no payment will be issued.
- Marine Institute Entrance Scholarships are a onetime non-renewable award

MARINE INSTITUTE ADVANCED DIPLOMA ENTRANCE SCHOLARSHIPS SCHOLARSHIP OVERVIEW:

Eligibility Criteria

To be eligible for the Marine Institute Advanced Diploma Entrance Scholarship students must first meet all Marine Institute entrance requirements as outlined in the Marine Institute Calendar.

MI Entrance Scholarship Average for the Advanced Diploma level will be based on the overall average in all courses attempted (excluding those in first year of an undergraduate program but including post baccalaureate courses).

Scholarship Allocation

Students obtaining an average of:

- Over 75%
 - will receive a Marine Institute Entrance Scholarship valued at \$1000

Regulations

- Entrance scholarships are to be awarded in the Fall Semester.
- The MI entrance scholarships are open to Canadian citizens and permanent residents graduating from North American post-secondary institutions, who are admitted to the Marine Institute on the basis of current entrance standards, and who meet the above outlined scholarship average. They are also open to students in the above category that may not be coming directly from post-secondary study. This is limited to those who have previously graduated from post-secondary, are admitted to the Marine Institute on the basis of entrance standards, and who meet the above outline scholarship average.
- Students may receive only one internal entrance scholarship.
- Any student in receipt of an externally funded entrance scholarship is still eligible to receive a MUN or MI entrance scholarship.

- A student who is awarded an MI Advanced Diploma entrance scholarship does have the option to apply to defer the scholarship offer for one year. To defer a scholarship, the student must provide written documentation in the form of a letter to the scholarship administrator. The letter must detail the reasons for deferring the scholarship. All applications are reviewed by the scholarship committee.

Awarding of Scholarship

- Scholarship payment will only be made after the last date to drop and add courses for that specific academic term as reflected in the proper academic diary.
- If a student drops below a full time course load in their first term of study, the scholarship offer will be revoked and no payment will be issued.
- Marine Institute Entrance Scholarships are a onetime non-renewable award.

- 61** Undergraduate Degrees
- 67** Master's Degrees
- 75** Joint Diploma of Technology/
Bachelor of Technology
- 86** Post Graduate Certificate
- 88** Advanced Diplomas
- 94** Technology Diplomas
- 109** Technician Diplomas
- 115** Technical Certificates
- 126** Transport Canada Programs



DESCRIPTION OF DEGREE PROGRAMS

Students must meet all regulations of the Fisheries and Marine Institute in addition to those stated in the University's general regulations. For information concerning fees and charges, admission/readmission to the University, and general academic regulations (undergraduate), refer to UNIVERSITY REGULATIONS (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0000>).

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

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 programs are available on campus and by distance delivery.

BACHELOR OF MARITIME STUDIES

The Bachelor of Maritime Studies program prepares graduates for career advancement in the maritime and related industries. It is designed for students who have graduated from accredited, or Transport Canada approved, diploma of technology programs in the marine fields. The program is also available to professional mariners, professional fish harvesters and certain Canadian Forces (Naval Operations) personnel. 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.

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 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. 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 optional areas are:

- Engineering and Applied Science Technology Option, which is normally chosen by students who have an engineering/applied science technology diploma.
- Health Sciences Technology Option, which is normally chosen by students who have a health sciences technology diploma.

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)** (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0268> f) or University requirements.

GENERAL INFORMATION

1. All application forms must be submitted to the Admissions Office, Office of the Registrar, Memorial University of Newfoundland, St. John's, NL, A1C 5S7.
2. For the purpose of satisfying the requirements of **UNIVERSITY REGULATIONS - Year of Degree and Departmental Regulations - All Other Faculties and Schools** (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0489#REGS-0494>), Pre-Bachelor of Maritime Studies and Pre-Bachelor of Technology students will normally follow regulations in effect in the academic year in which the student first completes a course(s) in the Bachelor of Maritime Studies or Bachelor of Technology program as a Pre-Bachelor of Maritime Studies or Pre-Bachelor of Technology student. However, the student may elect to follow subsequent regulations introduced during the student's tenure in a program.
3. 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.

Admission Requirements for Applicants to the Bachelor of Maritime Studies Program

1. An applicant must submit a form for admission/readmission to the University. 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.** Applicants must meet the general admission/readmission requirements of the University and be eligible for admission to the Bachelor of Maritime Studies 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 holding a Transport Canada Certificate of Competency at the Master Intermediate Voyage level or equivalent,

UNDERGRADUATE DEGREE PROGRAMS

- **Category F:** applicants holding a Transport Canada Certificate of Competency at the Engineering Second Class level or equivalent,
- **Category G:** applicants who have Canadian Forces (Naval Operations) training of a type and at a level acceptable to the Admissions Committee.

Applications to the program will be considered by the appropriate admissions committee(s).

In accordance with the **UNIVERSITY REGULATIONS - Residence Requirements - Second Degree** (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0508#REGS-0521>), students completing the Bachelor of Maritime Studies program, as a second degree, must complete a minimum of an additional 9 credit hours beyond a first degree and the work completed as required for admission to this degree.

Admission Requirements for Applicants to the Bachelor of Technology Program

1. An applicant must submit a form for admission/readmission to the University. 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:

Categories for Admission

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 accredited by the Canadian Medical Association (CMA),
- **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.

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.

Applications to the program will be considered by the appropriate admissions committee(s).

In accordance with the **UNIVERSITY REGULATIONS - Residence Requirements - Second Degree** (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0508#REGS-0521>), students completing the Bachelor of Technology program, as a second degree, must complete a minimum of an additional 9 credit hours beyond a first degree and the work completed as required for admission to this degree.

DEGREE PROGRAM REGULATIONS

BACHELOR OF MARITIME STUDIES

- 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 1 Bachelor of Maritime Studies - Course Requirements for all Students**. These courses may have prerequisites which have to be met.
- Students admitted to the program in certain categories may have to complete additional requirements. These are listed in **Table 2 Bachelor of Maritime Studies - Additional Requirements Based on Category of Admission**.
- When transfer credit has been granted for a course(s) taken to satisfy the requirements for admission, students must take additional university course(s).
- To meet the academic requirements for a Bachelor of Maritime Studies a candidate shall successfully complete the program with a minimum overall average of 60% and a minimum of 50% in each course required for the degree.
- Students must take 39 credit hours with 21 credit hours from the required courses and 18 credit hours from the electives.
- At least one elective must be chosen from each of the groups A and B.

BACHELOR OF TECHNOLOGY DEGREE

- 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 Technology - Engineering and Applied Science Technology Option** and **Table 4 Bachelor of Technology - Health Science Technology Option**. These courses may have prerequisites which have to be met.
- When transfer credit has been granted for a course(s) taken to satisfy the requirements for admission, students must take an additional elective(s) in the Bachelor of Technology program.
- 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.

BACHELOR OF TECHNOLOGY ENGINEERING AND APPLIED SCIENCE TECHNOLOGY OPTION

- 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

UNDERGRADUATE DEGREE PROGRAMS

Table 1: Bachelor of Maritime Studies - Course Requirements for all Students

Required Courses	Group A Electives	Group B Electives
<ul style="list-style-type: none"> • 3 credit hours in English at the 1000 level • MSTM 4001 • MSTM 4004 • MSTM 4040 • MSTM 4060 • MSTM 4090 • MSTM 410A/B 	<ul style="list-style-type: none"> • Business 1101 • Business 4000 • MSTM 4002 • MSTM 4005 • MSTM 4011 • MSTM 4012 • MSTM 4013 • MSTM 4020 • MSTM 4050 • Statistics 2500 	<ul style="list-style-type: none"> • Economics 2010 • Economics 2020 • Economics 3030 • Economics 3360 • Geography 3510 • Geography 4410 • MSTM 4014 • MSTM 4030 • Philosophy 2571 (formally 2801) • Political Science 3210 • Political Science 4200 • Sociology 2120 • Sociology 3120

Table 2: Bachelor of Maritime Studies - Additional Requirements Based on Category of Admission

Category of Admission	Additional Requirements
A: Students holding a diploma from the Marine Institute in nautical science, marine engineering technology, naval architecture technology or marine engineering systems design technology.	No additional requirements
B: Students holding a Canadian Technology Accreditation Board accredited, or Transport Canada approved, diploma in marine engineering technology or nautical science.	No additional requirements, with the possible exception of course prerequisites
C: Students 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.	May have to complete additional requirements
D: Students holding a Transport Canada Certificate of Competency at the Master Mariner, Fishing Master First Class, or Engineering First Class level or equivalent.	No additional requirements, with the possible exception of course prerequisites
E: Students holding a Transport Canada Certificate of Competency at the Master (Intermediate Voyage) level or equivalent.	Either: <ul style="list-style-type: none"> • Transport Canada - Ship management 093 (Master Mariner) or • Both of: Marine Institute Business and Organizational Management 3114 and Marine Institute Business and Organizational Management 3204. The prerequisite(s) for Business and Organizational Management 3204 will be waived.
F: Students holding a Transport Canada Certificate of Competency at the Engineering Second Class level or equivalent	Transport Canada - Applied Mechanics (1st Class) Transport Canada - Thermodynamics (1st Class) Transport Canada - Electrotechnology (1st Class)
G: Students who have Canadian Forces (Naval Operations) training of a type and at a level acceptable to the Admissions Committee	

UNDERGRADUATE DEGREES PROGRAMS

Table 3 Bachelor of Technology - Engineering and Applied Science Technology Options

Required Courses	Group A Electives	Group B Electives
<ul style="list-style-type: none"> • 3 credit hours in English at the 1000 level • MSTM 4010 • MSTM 4020 • MSTM 4040 • MSTM 4060 • MSTM 4090 • MSTM 410A/B • Statistics 1510 	<ul style="list-style-type: none"> • Business 1101 or Business 2102 • Business 4000 • Economics 3360 • MSTM 4011 • MSTM 4012 • MSTM 4013 • MSTM 4017 • MSTM 4050 • MSTM 4070 	<ul style="list-style-type: none"> • Economics 2010 • Economics 2020 • Economics 3080 • Geography 4410 • MSTM 4014 • MSTM 4015 • MSTM 4016 • MSTM 4030 • Philosophy 1100 • Philosophy 2571 • Religious Studies 3830 • Sociology 2120

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.

Table 4 Bachelor of Technology - Health Science Technology Option

Required Courses	Group A Electives	Group B Electives	Group C Electives
<ul style="list-style-type: none"> • 3 credit hours in English at the 1000 level • MSTM 4040 • MSTM 4060 • MSTM 4090 • MSTM 410A/B • Statistics 1510 or 2500 	<ul style="list-style-type: none"> • Business 1101 or 2102 • Business 4000 • Economics 3360 • MSTM 4011 • MSTM 4012 • MSTM 4013 • MSTM 4017 • MSTM 4050 	<ul style="list-style-type: none"> • Economics 2010 • Economics 2020 • Economics 3080 • Geography 4410 • MSTM 4014 • MSTM 4015 • MSTM 4016 • MSTM 4030 • Philosophy 1100 • Philosophy 2551 or 2552 or 2553 • Philosophy 2571 • Religious Studies 3830 • Sociology 2120 	<ul style="list-style-type: none"> • Biology 2040 or 2041 • Nursing 3023 • Nursing 4701 • Psychology 2010 • Psychology 2011 • Psychology 2012 • Psychology 2800 • Sociology 2110

WAIVER OF DEGREE PROGRAM REGULATIONS

Regulations (Undergraduate) - Waiver of Regulations (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0849>). Every student also has the right to request waiver of degree program regulations.

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.

APPEAL OF REGULATIONS

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 Regulations (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0859>)**.

COURSE DESCRIPTIONS

4001 The Organization and Issues of Shipping will provide 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; Maritime Studies 4001

4002 The Business of Shipping will provide students with an understanding of financial statements, costs, revenues and financial performance of shipping companies as well as computing voyage and annual cash flows. The course will develop an understanding of marine insurance and forecasting, and risk management.

PR: MSTM 4001

4004 Marine Environmental Management will introduce student to the requirements for the safe management of the marine environment. The 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.

4005 Trends and Issues in International Shipping will provide students with an understanding of how regulatory bodies and their legislation have evolved to affect the modern seafarer trading internationally. The 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.

4010 Assessment and Implementation Technology (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 predication, verification and mitigation of technological effects.

CR: the former Technology 4010

4011 Introduction to Intellectual Property and its Management 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.

4012 Occupational Health and Safety Legislation and Management 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.

4013 Structure and Functions of Technology-based Organizations focuses on the emergence of technology-based companies with an emphasis on how we can implement methods to increase their organizational effectiveness. This course will concentrate on the integration of three basic frameworks that are integral to production and performance in the 21st century. It will introduce students to the concepts and processes materializing in a technological milieu. This course also deals with the study of technological economics, 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 & organizational change, technological change, and national & global change. MSTM 4013 will also examine specialized topics in structure evolution for technology-based organizations with an emphasis on the need for adaptability, innovation & global communications.

4014 Technology and the Environment 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.

UNDERGRADUATE DEGREE PROGRAMS

4015 Technological Entrepreneurship 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.

4016 Technological Problem Solving 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.

4017 Technical Operations Management 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

4020 Economic Management for Technologists (formerly Technology 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 analyze 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; Technology 4020

4030 Technology in the Human Context (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

4040 Project Management for Technologists (formerly Technology 4040) 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.

CR: the former Technology 4040

4050 Introduction to Quality Management (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

4060 Advanced Technical Communications 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

4070 Special Topics in Technology 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.

4090 Introduction to Technology 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.

410A/B (formerly MSTM 4100 and 4200) is a two-semester linked course based on independent study of a problem involving the management of technology. The subject of study will be decided in consultation with the course instructor and must be approved by a committee. The student will identify a research topic in a specialty area, write a concept paper, develop a proposal and write a report.

CR: Maritime Studies 4000; Technology 4000; MSTM 4100; MSTM 4200

PR: MSTM 4060

OR: MSTM 410A/B must be completed within three consecutive semesters

MASTER OF MARINE STUDIES (FISHERIES RESOURCE MANAGEMENT)

Vice-President of Memorial University (Marine Institute)

G. Blackwood

Academic Director

K. Rideout

ADMINISTRATION

The programs will be administered by an Academic Director appointed by the Vice-President (Marine Institute), together with an Academic Advisory Committee.

An Academic Advisory committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). This committee will consist of the Academic Director as Chair, three members from the Marine Institute and two members from other academic units of the University. Normally, all appointments will be for a period of three (3) years.

A Technical Advisory Committee consisting of a cross-section of members with professional expertise related to the fishery, will provide regular feedback on program content, instruction, and future direction of the Program. Members of this Committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). The Academic Director will be an ex officio member and Chair of the Technical Advisory Committee. Normally all appointments will be for a period of three (3) years.

PROGRAMS

There are two graduate programs in Fisheries Resource Management: **the Graduate Diploma** and the **Master of Marine Studies**.

GRADUATE DIPLOMA

The Graduate Diploma in Fisheries Resource Management provides an opportunity for fisheries professionals to enhance their perspective on fishery issues from a variety of disciplines.

1. Admission Requirements

To be admitted to the Graduate Diploma in Fisheries Resource Management, a student must be eligible to register in the Master of Marine Studies program (see **Master of Marine Studies, Admission Requirements** below)

2. Program of Study

The program is offered online and requires successful completion of 18 credit hours of course work selected from the **Courses** section below:

- 5 core courses (15 credit hours);
- 1 elective course (3 credit hours) from either Category A or Category B Electives

3. Evaluation

Candidates for the Graduate Diploma in Fisheries Resource Management must obtain a grade of B or better in all program courses.

MASTER OF MARINE STUDIES

The Master of Marine Studies (Fisheries Resource Management) (M.M.S.) is a multi-disciplinary program of study that will provide the candidate with exposure to all dimensions of modern fisheries resource management in an international context. The program is aimed at professionals working in or intending to enter careers in fisheries management. The program is offered online and requires successful completion of either (a) 24 credit hours of course work and a Major Report, or (b) 30 credit hours of course work. Students who have successfully completed the requirements for the Graduate Diploma may elect to continue their program of study in order to earn the Degree.

1. Admission Requirements

- a. Admission to the program is on a competitive basis. To be considered for admission to the program an applicant must normally have an undergraduate degree with a minimum of a high second class standing from an institution recognized by the Senate.
- b. In addition to the academic requirements in a. above applicants will normally have a demonstrated commitment to fisheries through employment or experience in a sector of the fishery, in a regulatory agency or government department connected to fisheries, in a non-governmental agency, or through self-employment or consulting activities related to fisheries.
- c. The deadlines for submission of applications for candidates wishing to enter studies are as follows:
 - Fall (September) Semester: June 15
 - Winter (January) Semester: October 15
 - Spring (May) Semester: February 15Applications received after listed deadlines will be considered as time and resources permit.

2. Program of Study

- a. Candidates for the Master of Marine Studies (Fisheries Resource Management) shall be required to complete a minimum of either:
 - i. 24 credit hours of course work plus a Major Report on the Course Work Plus a Major Report Route completed in accordance with **General Regulation Theses and Reports** of the School of Graduate Studies. Course work must include the following course selections from the **Courses** section below:
 - 5 core courses (15 credit hours);
 - 1 elective course (3 credit hours) from Category A electives
 - 1 elective course (3 credit hours) from Category B electives
 - 1 elective course (3 credit hours) from either Category A or Category B

- ii. 30 credit hours on a **Comprehensive-Course Route** which must include the following course selections from the **Courses** section below:
 - 5 core courses (15 credit hours);
 - 2 elective courses (6 credit hours) from Category A electives
 - 1 elective course (3 credit hours) from Category B electives
 - 2 elective courses (6 credit hours) from either Category A or Category B
 - b. Depending upon the applicant's academic background, other courses may be required by the Academic Advisory Committee.
 - c. Transfer of credit for graduate courses completed in other programs at the University or at other institutions recognized by Senate will be considered in accordance with School of Graduate Studies General Regulations governing **Transfer of Course Credits**.
 - d. Those having partially completed the requirements for the degree under 2011-2012 Calendar Regulations may apply to transfer to one of the above program options and will be considered in accordance with the following
 - i. Those having previously completed all coursework required for the degree, but who have not submitted the Major Report, may satisfy the comprehensive course route requirements by successfully completing an additional 6 credit hours of courses as follows:
 - MSTM 6005 (for students who completed the former FRM 6009 to satisfy the 24 credit hours of courses required under previous program regulations, an additional elective course chosen from Category A or B must be selected in place of this course)
 - One further elective course (3 credit hours) from Category A or B electives
 - ii. Those having previously partially completed the coursework required for the degree may satisfy the Major Report route requirements by successfully completing:
 - MSTM 6001 (or the former FRM 6001)
 - MSTM 6002 (or the former FRM 6002)
 - MSTM 6003 (or the former FRM 6003)
 - MSTM 6004 (or either of the former FRM 6004 or FRM 6005)
 - MSTM 6005 (or the former FRM 6009)
 - a Major Report completed in accordance with General Regulation **Theses and Reports** of the School of Graduate Studies together with the following course selections from the **Courses** section below:
 - 1 elective course (3 credit hours) from Category A electives
 - 1 elective course (3 credit hours) from Category B electives
- 1 elective course (3 credit hours) from either Category A or Category B. The former FRM 6007 and/or FRM 6008 may be used to partially satisfy this requirement
- iii. Those having previously partially completed the coursework required for the degree may satisfy the comprehensive course route requirements by successfully completing:
 - MSTM 6001 (or the former FRM 6001)
 - MSTM 6002 (or the former FRM 6002)
 - MSTM 6003 (or the former FRM 6003)
 - MSTM 6004 (or either of the former FRM 6004 or FRM 6005)
 - MSTM 6005 (or the former FRM 6009)together with the following course selections from the **Courses** section below:
 - 1 elective course (3 credit hours) from Category A electives
 - 1 elective course (3 credit hours) from Category B electives
 - 3 elective courses (9 credit hours) from either Category A or Category B. The former FRM 6007 and/or FRM 6008 may be used to partially satisfy this requirement.
- ## 2.1. Course Work Plus a Major Report Route
- 24 credit hours of course work plus a Major Report completed in accordance with **General Regulations, Theses and Reports** of the School of Graduate Studies. Course work must include the following course selections from the **Courses** section below:
- 5 core courses (15 credit hours)
 - 1 elective course (3 credit hours) from **Category A Electives**
 - 1 elective course (3 credit hours) from **Category B Electives**
 - 1 elective course (3 credit hours) from either **Category A or Category B**
- ## 2.2 Comprehensive Course Route
- 30 credit hours on the Comprehensive Course Route which must include the following course selections from the **Courses** section below:
- 5 core courses (15 credit hours)
 - 2 elective courses (6 credit hours) from **Category A Electives**
 - 1 elective course (3 credit hours) from **Category B Electives**
 - 2 elective courses (6 credit hours) from either **Category A or Category B**

MASTER OF MARINE STUDIES (FISHERIES RESOURCE MANAGEMENT)

3. EVALUATION

- a. Candidates for the Master's Degree must obtain a grade of B or better in all program courses.
- b. Candidates who have received a grade less than a B in a program course will be permitted to remain in the program, provided the course is retaken and passed with a grade of B or better. Alternatively the candidate may, on the recommendation of the Program Committee, substitute another graduate course. Only one such repeat or substitution will be permitted in the program.
- c. The Major Report will normally be undertaken towards the end of the program. The topic of the report and a faculty Supervisor will be chosen by the candidate in consultation with the Academic Advisory Committee. The report provides an opportunity to synthesize an original perspective on a selected fisheries issue through the examination of appropriate literature and other sources of information. Normally the report will be multi-disciplinary in nature and will result in a document equivalent to a publishable periodical journal article or a consultant's report on a particular issue. It will be assessed in accordance with General Regulation **Theses and Reports** of the School of Graduate Studies

3. Category B Electives:

- MSTM 6022 Communication and Conflict Resolution in a Technical Environment
- MSTM 6023 Strategic Planning, Policy, Participation and Management in Technical Operations
- MSTM 6033 Quality Systems
- MSTM 6034 Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments
- MSTM 6039 Sustainability and Environmental Responsibility
- MSTM 6044 Marine Environment Law and Pollution Control
- MSTM 6056 Management for International Development
- MSTM 6071 Management of Aquaculture Technology

COURSES

1. Core Courses

- MSTM 6001 Fisheries Ecology (CR: the former FRM 6001)
- MSTM 6002 Fisheries Resource Assessment Strategies (CR: the former FRM 6002)
- MSTM 6003 Fisheries Economics (CR: the former FRM 6003)
- MSTM 6004 Fisheries Policy and Planning (CR: the former FRM 6004; FRM 6005)
- MSTM 6005 Overview of World Fisheries (CR: the former FRM 6009)

2. Category A Electives:

- MSTM 6006 Business Management for Fisheries (CR: the former FRM 6006)
- MSTM 6007 Fisheries Technology
- MSTM 6008 Social and Philosophical Issues of Fisheries Management
- MSTM 6009 Current Issues for Sustainable Fisheries
- MSTM 6010 Legal Aspects of Fisheries Resource Management

MASTER OF MARITIME MANAGEMENT

Vice-President of Memorial University (Marine Institute)

G. Blackwood

Academic Director

J. Parsons

ADMINISTRATION

The Master of Maritime Management (MMM) program will be administered by an Academic Director appointed by the Vice-President (Marine Institute), together with an Academic Advisory Committee.

An Academic Advisory Committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). This committee will consist of the Academic Director as Chair, three members from the Marine Institute, one member from the Faculty of Business Administration and one member from another unit of the University. Normally, all appointments will be for a period of three (3) years.

A Technical Advisory Committee, consisting of a cross-section of members with professional expertise related to the maritime sector, will provide regular feedback on program content, instruction, and future direction of the Program. Members of this Committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). The Academic Director will be an ex officio member and Chair of the Technical Advisory Committee. Normally all appointments will be for a period of three (3) years.

PROGRAM

The Master of Maritime Management (MMM) is a comprehensive academic program that provides a broad understanding of the structure and operation of organizations and the factors that influence business decisions in the context of maritime-based organizations. It provides a maritime management focus through the development of knowledge and understanding of the nature of technical operations and the factors that have an impact on their success, as well as the ability to apply these concepts within their organizations.

The program is offered online and requires successful completion of either (i) 24 credit hours of course work and a comprehensive project and report (6 credit hours), or (ii) 30 credit hours of course work. Candidates will typically register on a part-time basis.

ADMISSION REQUIREMENTS

1. Admission to the program is on a competitive basis. To be considered for admission to the program 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 Maritime Studies or Bachelor of Technology, or a comparable undergraduate degree with appropriate maritime sector and business management course work.
 - Appropriate technical knowledge and relevant marine-sector employment experience.
2. The deadlines for submission of applications for candidates wishing to enter studies are as follows:

- Fall (September) Semester: May 15.
- Winter (January) Semester: September 15
- Spring (May) Semester: January 15

3. In exceptional cases, applicants who have not completed an undergraduate degree, but who meet all other requirements, may be considered for admission. Preference will be given to those who have at least 10 years of relevant professional and managerial experience, and have successfully completed several years of post-secondary studies. Applicants who do not meet normal admission requirements shall be required to complete, with a high level of achievement, certain undergraduate courses before being considered for admission.
4. 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:
 - 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
 - International English Language Testing System (IELTS) and achieve a score of 7 (or higher).

Information regarding the TOEFL is available from the Educational Testing Service at www.ets.org. IELTS information is available at www.ielts.org. It is noted that other equivalent tests acceptable to the School of Graduate Studies will also be considered.

PROGRAM OF STUDY

1. Candidates for the Master of Maritime Management shall be required to complete a minimum of either:
 - a. Twenty-four credit hours of course work and a major project and report (6 credit hours). Course work includes two compulsory core courses (6 credit hours); and six elective courses (18 credit hours). Students on the project route will complete MSTM 6101 Project in Maritime Management (6 credit hours).

Core Courses (Two to be completed):

MSTM 6041	Marine Policy
MSTM 6042	Business of Shipping/Transportation of Goods

Elective Courses (Six to be completed: a minimum of one from Category A and three from Category B):

Category A

MSTM 6022	Communication and Conflict Resolution in a Technical Environment
MSTM 6023	Strategic Planning, Policy, Participation and Management in Technical Operations
MSTM 6030	Principles of Management for Engineering Technology Enterprises

MSTM 6034 Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments

MSTM 6039 Sustainability and Environmental Responsibility

MSTM 6052 Management of Intellectual Property

MSTM 6054 Technology Assessment

Category B

MSTM 6027 Coastal and Ocean Environmental Policies

MSTM 6043 Marine Law

MSTM 6044 Marine Environment Law and Pollution Control

MSTM 6045 Port Operations and Management

MSTM 6046 Information Systems in the Marine Environment

MSTM 6047 Maritime Security and Event Investigation

MSTM 6048 Emerging Issues in International Marine Transportation

MSTM 6049 Maritime Risk Analysis and Management

MSTM 6050 Maritime Health, Safety, Environment and Quality

MSTM 6051 International Maritime Compliance & Business Continuity Planning

Project in Maritime Management

MSTM 6101 Project in Maritime Management (6 credit hours)

Students will choose a topic in consultation with the Academic Director and will work independently to carry out an in-depth study of a problem or application within the area of maritime management and fully document and present their findings. Preferably the problem will be directly related to a workplace situation.

- b. 30 credit hours on a course-based route. Course work includes two compulsory core courses (6 credit hours); and eight elective courses (24 credit hours).

Core Courses (Four to be completed):

MSTM 6041 Marine Policy

MSTM 6042 Business of Shipping/Transportation of Goods

Elective Courses (Eight to be completed: a minimum of two from Category A and four from Category B):

Category A

MSTM 6022 Communication and Conflict Resolution in a Technical Environment

MSTM 6023 Strategic Planning, Policy, Participation and Management in Technical Operations

MSTM 6030 Principles of Management for Engineering Technology Enterprises

MSTM 6034 Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments

MSTM 6039 Sustainability and Environmental Responsibility

MSTM 6052 Management of Intellectual Property

MSTM 6054 Technology Assessment

Category B

MSTM 6027 Coastal and Ocean Environmental Policies

MSTM 6043 Marine Law

MSTM 6044 Marine Environment Law and Pollution Control

MSTM 6045 Port Operations and Management

MSTM 6046 Information Systems in the Marine Environment

MSTM 6047 Maritime Security and Event Investigation

MSTM 6048 Emerging Issues in International Marine Transportation

MSTM 6049 Maritime Risk Analysis and Management

MSTM 6050 Maritime Health, Safety, Environment and Quality

MSTM 6051 International Maritime Compliance & Business Continuity Planning

- Up to three relevant elective courses (nine credit hours) may be transferred from other graduate programs within the School of Graduate Studies or from other post-secondary institutions recognized by Senate, subject to the approval of the Dean of Graduate Studies on the recommendation of the Academic Director.

EVALUATION

- Candidates for the Master of Maritime Management Degree must obtain a grade of B or better in all program courses.
- Candidates who receive a grade of less than B in any course will be permitted to remain in the program provided the course is repeated and passed with a grade of B or better. Alternatively, the candidate may, on the recommendation of the Academic Director, and with the approval of the Dean of Graduate Studies, substitute another graduate course. Only one course repetition or substitution will be permitted during the candidate's program after which the candidate shall be required to withdraw from the program.

Vice-President of Memorial University (Marine Institute)

G. Blackwood

Academic Director

C. Coronado

ADMINISTRATION

The Program will be administered by an Academic Director appointed by the Vice-President (Marine Institute), together with an Academic Advisory Committee.

An Academic Advisory Committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). This committee will consist of the Academic Director as Chair, three members from the Marine Institute and one member from each of the Faculty of Business Administration and the Faculty of Engineering and Applied Science. Normally, all appointments will be for a period of three (3) years.

A Technical Advisory Committee consisting of a cross-section of members with professional expertise related to the technology sector, will provide regular feedback on program content, instruction, and future direction of the Program. Members of this Committee will be appointed by the Dean of Graduate Studies on recommendation of the Vice-President (Marine Institute). The Academic Director will be an ex officio member and Chair of the Technical Advisory Committee. Normally all appointments will be for a period of three (3) years.

PROGRAM

The Master of Technology Management (MTM) is a comprehensive academic program that provides a broad understanding of the structure and operation of organizations and the factors that influence business decisions in the context of technology-based organizations. It provides a technology management focus through the development of knowledge and understanding of the nature of technical operations and the factors that have an impact on their success, as well as the ability to apply these concepts within their organizations

The program consists of two Options.

- Engineering and Applied Science Technology Option
- Aquaculture Technology Option

The program is offered online and requires successful completion of either (i) 24 credit hours of course work and a comprehensive project and report (6 credit hours), or (ii) 30 credit hours of comprehensive course work. Candidates will typically register on a part-time basis.

ADMISSION REQUIREMENTS

Admission to the program is on a competitive basis.

1. The deadlines for submission of applications are as follows:
 - Fall (September) semester: May 15
 - Winter (January) semester: September 15
2. To be considered for admission to the Engineering and Applied Science Technology 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 of Newfoundland 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.

3. To be considered for admission to the Aquaculture Technology Option an applicant will normally possess a second class or better undergraduate degree from a university of recognized standing and will normally have:
 - a post-graduate aquaculture credential or an aquaculture focus in their undergraduate degree; or significant professional experience in the aquaculture industry; and
 - a minimum of two (2) years relevant employment experience.
4. In exceptional cases, applicants who have not completed an undergraduate degree, but who meet all other requirements, may be considered for admission. Preference will be given to those who have significant and relevant professional experience, and have successfully completed several years of post-secondary studies. Applicants who do not meet normal admission requirements shall be required to complete, with a high level of achievement, certain undergraduate courses before being considered for admission.
5. 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:
 - 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
 - International English Language Testing System (IELTS) and achieve a score of 7 (or higher).

Information regarding the TOEFL is available from the Educational Testing Service at www.ets.org. IELTS information is available at www.ielts.org. It is noted that other equivalent tests acceptable to the School of Graduate Studies will also be considered.

6. Upon acceptance into the program, students will be admitted to one of the two Options: the Engineering and Applied Science Technology Option or the Aquaculture Technology Option.

PROGRAM OF STUDY

Masters of Technology Management - Engineering and Applied Science Technology Option

1. Candidates for the Master of Technology Management (Engineering and Applied Science Technology Option) shall be required to complete a minimum of either:

- a. 24 credit hours of course work and a major project and report (6 credit hours). Course work includes two compulsory core courses (6 credit hours); and six elective courses (18 credit hours). Students on the project route will complete MSTM 6100: Project in Engineering and Applied Science Technology Management (6 credit hours).

Core Courses (Two to be completed):

MSTM 6031	Overview of Technical Operations
MSTM 6032	Managing Technological Innovation

Elective Courses (Six to be completed):

MSTM 6022	Communication and Conflict Resolution in a Technical Environment
MSTM 6023	Strategic Planning, Policy, Participation and Management in 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 Environments
MSTM 6036	Supply Chain Management and Advanced Engineering Technology Operations
MSTM 6037	Risk Analysis and Operations in the Engineering Technology Sector
MSTM 6038	Manufacturing and Engineering Technology Management
MSTM 6039	Sustainability and Environmental Responsibility
MSTM 6052	Management of Intellectual Property
MSTM 6054	Technology Assessment
MSTM 6056	Management of International Development

Project in Engineering and Applied Science Technology Management

MSTM 6100 Project in Technology Management (6 credit hours) Students will choose a topic in consultation with the Academic Director and 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.

- b. 30 credit hours on a comprehensive-course route. Course work includes two compulsory core courses (6 credit hours); and eight elective courses (24 credit hours).

Core Courses (Two to be completed):

MSTM 6031	Overview of Technical Operations
MSTM 6032	Managing Technological Innovation

Elective Courses (Eight to be completed):

MSTM 6022	Communication and Conflict Resolution in a Technical Environment
MSTM 6023	Strategic Planning, Policy, Participation and Management in 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 Environments
MSTM 6036	Supply Chain Management and Advanced Engineering Technology Operations
MSTM 6037	Risk Analysis and Operations in the Engineering Technology Sector
MSTM 6038	Manufacturing and Engineering Technology Management
MSTM 6039	Sustainability and Environmental Responsibility
MSTM 6052	Management of Intellectual Property
MSTM 6054	Technology Assessment
MSTM 6056	Management of International Development

2. Up to three relevant elective courses (9 credit hours) may be transferred from other graduate programs within the School of Graduate Studies or from other post-secondary institutions recognized by Senate, subject to the approval of the Dean of Graduate Studies on the recommendation of the Academic Director.

Master of Technology Management - Aquaculture Technology Option

1. Candidates for the Master of Technology Management (Aquaculture Technology Option) shall be required to be required to complete a minimum of either:
- a. 24 credit hours of course work and a major project and report (6 credit hours). Course work includes two compulsory core courses (6 credit hours); and six elective courses (18 credit hours). Students on the project route will complete MSTM 6102: Project in Aquaculture Technology Management (6 credit hours).

MASTER OF TECHNOLOGY MANAGEMENT

Core Courses (Two to be completed):

MSTM 6031	Overview of Technical Operations
MSTM 6032	Managing Technological Innovation

Elective Courses (Six to be completed including at least three from Category B):

Category A

MSTM 6022	Communication and Conflict Resolution in a Technical Environment
MSTM 6023	Strategic Planning, Policy, Participation and Management in Technical Operations
MSTM 6033	Quality Systems
MSTM 6034	Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments
MSTM 6037	Risk Analysis and Operations in the Engineering Technology Sector
MSTM 6039	Sustainability and Environmental Responsibility
MSTM 6052	Management of Intellectual Property
MSTM 6056	Management of International Development

Category B

MSTM 6071	Management of Aquaculture Technology
MSTM 6072	Animal Husbandry Management
MSTM 6073	Aquaculture Environmental Management
MSTM 6074	Aquaculture Site and Operational Assessment
MSTM 6075	Aquaculture Engineering Technology Management

Project in Aquaculture Technology Management

MSTM 6102 Project in Aquaculture Technology Management (6 credit hours). Students will choose a topic in consultation with the Academic Director or designate and will work independently to carry out an in-depth study of a problem or application within the area of aquaculture technology management and fully document and present their findings. Preferably the problem will be directly related to a workplace situation.

- b. 30 credit hours on a comprehensive-course route. Course work includes two compulsory core courses (6 credit hours); and eight elective courses (24 credit hours).

Core Courses (Two to be completed):

MSTM 6031	Overview of Technical Operations
MSTM 6032	Managing Technological Innovation

Elective Courses (Eight to be completed at least from three from Category B)

Category A

MSTM 6022	Communication and Conflict Resolution in a Technical Environment
MSTM 6023	Strategic Planning, Policy, Participation and Management in Technical Operations
MSTM 6033	Quality Systems
MSTM 6034	Project Management in the Offshore, Health, Fisheries and Engineering Technology Environments
MSTM 6037	Risk Analysis and Operations in the Engineering Technology Sector
MSTM 6039	Sustainability and Environmental Responsibility
MSTM 6052	Management of Intellectual Property
MSTM 6056	Management of International Development

Category B

MSTM 6071	Management of Aquaculture Technology
MSTM 6072	Animal Husbandry Management
MSTM 6073	Aquaculture Environmental Management
MSTM 6074	Aquaculture Site and Operational Assessment
MSTM 6075	Aquaculture Engineering Technology Management

2. Up to three relevant elective courses (9 credit hours) may be transferred from other graduate programs within the School of Graduate Studies or from other post-secondary institutions recognized by Senate, subject to the approval of the Dean of Graduate Studies on the recommendation of the Academic Director.

EVALUATION

1. Candidates for the Master of Technology Management Degree must obtain a grade of B or better in all program courses.
2. Candidates who receive a grade of less than B in any course will be permitted to remain in the program provided the course is repeated and passed with a grade of B or better. Alternatively, the candidate may, on the recommendation of the Academic Director, and with the approval of the Dean of Graduate Studies, substitute another graduate course. Only one course repetition or substitution will be permitted during the candidate's program after which the candidate shall be required to withdraw from the program.

JOINT DIPLOMA OF TECHNOLOGY/BACHELOR OF TECHNOLOGY- FOOD TECHNOLOGY

The food and beverage processing sector is the second largest manufacturing industry in Canada shipping \$87.8 billion worth of goods in 2008 and employing more than 256,000 people. It is a very competitive industry with manufacturers continually developing new products and updating their technology. As a result, there is a great demand for qualified graduates for a wide range of activities. They include the management of the food process itself; maintenance of the nutritional quality of food; assurance of the food quality and purity; and development of new products.

The Joint Diploma of Technology/Bachelor of Technology in Food Technology addresses the human resource needs of this vast industry while meeting the desire for a Bachelor Degree in this field.

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

This is a four year program that incorporates all the elements of a diploma of technology along with the courses to complete the Bachelor of Technology. It consists of 8 semesters, a technical session and 2 work terms.

PROGRAM HIGHLIGHTS

Students completing our four-year food technology program will earn both a Diploma of Technology in Food Technology and a Bachelor of Technology Degree.

The integrated diploma-degree provides our students with the opportunity to complete the Diploma of Food Technology program, which retains the technical focus important for job entry in the food technology sector, concurrently with the requirements for a Bachelor of Technology degree that emphasizes the theory behind technological applications.

Students will experience a range of teaching methods including lectures, tutorials, workshops, laboratories, seminars and study tours.

PROGRAM OUTLINE

TERM 1

BIOL 1100 (Biology)
CHEM 1101 (General Chemistry I)
CMSK 1102 (Technical Communications)
ENGR 1103 (Engineering Graphics)
MATH 1100 (Pre-Calculus)
PHYS 1100 (Physics)

TERM 2

CHEM 1201 (General Chemistry II)
CMSK 1201 (Communication at Work)
CPSK 1103 (Computer Database and Spreadsheet Applications)
FDTE 1100 (Introduction to Food Science and Technology)
MATH 1101 (Calculus)
PHYS 1200 (Physics)

TERM 3

BIOL 2105 (Microbiology)
BSMG 3200 (Introduction to Business)
CHEM 2103 (Organic Chemistry)
FDTE 2105 (Nutrition)
FDTE 2112 (Food Safety and Sanitation)
MATH 1200 (Calculus)
WKTM 1002 (Work Term Preparation Seminar)

TERM 4

BSMG 2209 (Product Development)
BSMG 3118 (Technical Problem Solving)
CHEM 3102 (Bio-chemistry)
CHEM 3200 (Physical Chemistry)
FDTE 2202 (Food Processing I)
QLAS 2104 (Food Evaluation)

WORK TERM I

WKTM 2107 (Work Term - Food Technology)

TERM 5

BIOL 2202 (Food Microbiology)
ENGL 1080 (Critical Reading and Writing I)
FDTE 2103 (Food Engineering Principles)
FDTE 3106 (Seafood Processing Technology)
QLAS 3101 (Quality Assurance)
B.Tech Elective

TERM 6

CHEM 3100 (Food Chemistry)
FDTE 3107 (Food Processing II)
MSTM 4030 (Technology in the Human Context)
MSTM 4050 (Introduction to Quality Management)
MSTM 4060 (Advanced Technical Communications)
STAT 2108 (Applied Statistics)

JOINT DIPLOMA OF TECHNOLOGY/BACHELOR OF TECHNOLOGY- FOOD TECHNOLOGY

TECHNICAL SESSION I

FDTE 2118 (Canned Food and Thermal Processing)

FDTE 3102 (Food Safety Enhancement Program/Hazard
Analysis Critical Control Point)

FDTE 3104 (Quality Management Program)

FDTE 3108 (Global Food Safety Initiatives)

WORK TERM II

WKTM 3301 (Work Term 2 - Food Technology)

TERM 7

CHEM 3101 (Food Analysis)

FDTE 3101 (Food Biotechnology)

MSTM 4010 (Assessment and Implementation of Technology)

MSTM 4040 (Project Management for Technologists)

MSTM 4070 (Special Topics in Technology)

MSTM 4100 (Technical Project and Report I)

TERM 8

BSMG 3500 (Fundamentals of Canadian Food Laws and
Regulations)

FDTE 3100 (Food Engineering - Unit Operations)

MSTM 4020 (Economic Management for Technologists)

MSTM 4200 (Technical Project and Report II)

B. Tech. Elective

B. Tech. Elective

CAREERS

The Food Technology program will produce a graduate who has combined skills in chemistry, nutrition, microbiology, engineering, processing, quality assurance and business management; one who is well qualified to work in many aspects of the food industry as well as in government. With two work terms built into the program, our students graduate with experience in their chosen field that will help them gain employment

MISSION

The Ocean Instrumentation program is designed to provide students the background information to function as an integral part of an organization specializing in the control of processes within the offshore oil and gas, innovative ocean technology and ocean observation sectors. The student training will include Programmable Logic Control, industrial controls, oceanographic instrumentation, troubleshooting and a number of specific marine electrical courses.

PROGRAM OVERVIEW

This program is designed to provide students the expertise in all aspects of Ocean Instrumentation including measuring and controlling industrial and environmental properties of ocean related industries. Students will also learn to program Programmable Logic Controllers, industrial controllers and data acquisition systems. The Marine Institute's degree in Ocean Instrumentation produces outstanding graduates with the solid technical skills required to;

- Specify, install, commission, operate and maintain ocean instrumentation sensors and systems
- Design and fabricate marine mechanical and electrical systems
- Program various controllers and data acquisition systems
- Specify, install and maintain various industrial networks.
- Understand and practice marine electrical safety standards
- Manage marine control systems

This is a four year program that consists of eight thirteen-week academic terms, three technical sessions and a work term. The first year includes many core courses common to other programs in the School of Ocean Technology. The second, third and fourth years all include a combination of fundamental diploma course requirements, program specific courses and Memorial University degree course components. The work term is after the third technical intercession and would be a minimum of eight weeks in duration during the summer months before the student's last year of study.

PROGRAM ENTRY

Refer to the Admissions Section of this Calendar. Applicants should possess strong skills in both mathematics and science to enter this program.

PROGRAM STRUCTURE

Length of the Program

- 4 academic years

Number of semesters

- Eight (8) 13 week academic semesters, three technical sessions and a work term

Number of courses

- 61 courses in 4 years of study

Work terms

- Students do a work term at the end of semester 6

Topics covered in each semester

- Refer to program calendar – Main areas of study

Physical requirements

- See general admission guidelines

CAREERS

Graduates of this program are expected to avail of careers in both the private and government sectors. Past graduates have found work as marine troubleshooting experts for innovative ocean technology companies, Ocean instrument technologists with the Federal Government, offshore instrumentation technologists and land based instrumentation technologists.

JOINT DIPLOMA OF TECHNOLOGY/BACHELOR OF TECHNOLOGY-OCEAN INSTRUMENTATION

PROGRAM OUTLINE

TERM 1

CHEM 1100 (Chemistry)
CMSK 1104 (Introduction to Technical Reporting)
CPSK 1102 (Introduction to Programming)
ELTK 1100 (Electrotechnology)
MATH 1101 (Introduction to Calculus)
PHYS 1100 (Physics)
SFTY 1104 (WHMIS)

TERM 2

CHEM 1200 (Chemistry)
ELTK 1200 (Electrotechnology)
ENGR 1202 (Engineering Graphics)
MATH 1200 (Calculus)
ONGR 1200 (Descriptive Oceanography)
PHYS 1200 (Physics)

TECHNICAL SESSION I

ELTK 1303 (Electrical Machines & Power Systems)
ELTR 1104 (Electronic Fabrication Techniques)
WKPR 2115 (Fitting Shop I)

TERM 3

CNTL 2111 (AC Motor Controls)
ELTR 1102 (Basic Electronic Devices)
ELTR 2102 (Digital Logic)
MATH 2101 (Advanced Calculus)
MECH 1101 (Mechanics)
MSTM 4090 (Introduction to Technology)

TERM 4

1000 Level English Course
CNTL 2206 (Instrumentation, Control & Automation)
CNTL 2207 (Programmable Logic Controllers - PLC's)
ELTR 2213 (Control Devices & Operation Amplifiers)
FLDS 2100 (Fluid Mechanics)
MSTM 4040 (Project Management for Technologists)
MTPR 2208 (Materials & Processes)

TECHNICAL SESSION II

ELTR 2113 (Fibre Optics)
ONGR 1301 (Instrumentation Oceanography)
WKPR 2301 (Fitting Shop)

TERM 5

CNTL 3105 (Instrumentation, Controls & Automation)
ELTR 2202 (Analog Transistor Circuits)
ELTR 2214 (Microcomputer Interfacing)
FLDS 3100 (Hydraulics & Pneumatics)
MSTM 4010 (Assessment and Implementation of Technology)
STAT 2108 (Applied Statistics)

TERM 6

CNTL 3201 (Advanced Programmable Logic Controllers - PLC's)
ELTR 3120 (Integrated Circuits)
ELTR 3212 (Networking Basics)
MTPR 2101 (Strength of Materials)
MSTM 4012 (Occupational Health and Safety Legislation and Management)
MSTM 4060 (Advanced Technical Communications)

TECHNICAL SESSION III

ELTK 3300 (Marine Electrical Knowledge)
ELTK 3301 (Marine Electrical Safety & Standards)
ELTK 3500 (Marine Cabling Installations)

WORK TERM

WKTM 3303

TERM 7

B. Tech. Elective
B. Tech. Elective
CNTL 3400 (Advanced Controls)
ELTR 2107 (Electronic Troubleshooting)
ELTR 3400 (Electronic Communications)
MECH 2100 (Machine Design)
MSTM 4020 (Economic Management for Technologists)
MSTM 4100 (Technical Project and Report I)

TERM 8

B. Tech. Elective
B. Tech. Elective
MSTM 4200 (Technical Project and Report II)
OMAP 2000 (Underwater Acoustic Applications)
TKPR 3500M (Electro-Mechanical Fabrication Project)

MISSION

The Ocean Mapping program is designed to:

- Provide a solid understanding of ocean mapping technologies through practical application of marine surveying, remote sensing, oceanographic instrumentation, and Geographic Information Systems for the collection, management, analysis and dissemination of ocean data.
- Provide comprehensive knowledge of the theory and practice of hydrographic surveying and applied disciplines.
- Provide an environment to practice analytical reasoning, decision-making, problem-solving and solution development as it relates to Marine Geomatics.

PROGRAM OVERVIEW

The Ocean Mapping Program is designed to:

- Prepare graduates to enter the workforce with an advanced level of technological literacy and competency with respect to marine technology.
- Immerse students in both the theory and practical aspects of marine technology, allowing for a seamless transition from the classroom to the real world.
- Provide the students with the necessary expertise in all aspects of Ocean Mapping, including the collection, processing and management of physical, biological and chemical data pertaining to the ocean.
- Integrate and apply the use of satellite imagery and other methodologies to determine the many parameters in the ocean.
- Develop the skills to design, develop, store, analyze manage and disseminate spatial and attribute information within a Geographic Information System (GIS).
- Examine the ocean cube – comprised of the surface, water column, seabed and seabed subsurface.
- Operate and troubleshoot traditional and industrial standard marine surveying equipment within relevant working environments.
- Operate and troubleshoot oceanographic instrumentation equipment within relevant working environments, both on land and at sea.
- Utilize electromagnetic and acoustic remote sensing technologies for advanced analysis of marine data.
- Design, develop and manage Geographic Information Systems (GIS) from the developer, analyst, Information Technology (IT), manager and end-user perspectives.

Main Areas of Study

The first year of the Ocean Mapping program is similar to the common first year structure of other programs at the Marine Institute, with the inclusion of some program specific areas of study. All students will complete core courses in Mathematics, Physics, Chemistry and Electrotechnology. Additionally, students will:

- Complete a communication skills course designed specifically for the School of Ocean Technology pertaining to technical report writing in semester one.
- Complete two courses covering the fundamentals of

oceanography and underwater acoustic applications in semester two.

- Following semester two, a five-week technical session will be completed whereby the students become actively engaged in the practical application of ocean mapping technology in the fields of Hydrography, Tides, GPS, Surveying and Oceanographic Instrumentation. Some of the practical elements associated with data acquisition will be performed at sea on a Marine Institute vessel.

The second year of the Ocean Mapping program marks the beginning of a more concentrated effort towards the theory and application of Geographic Information Systems (GIS), Remote Sensing and Underwater Acoustics, with emphasis placed on the utilization of ocean and ocean-related data. Students will:

- Complete introductory courses in Geographic Information Systems (GIS), Marine Geology and Geophysics, Computer Networking along with an Advanced Calculus course covering relevant mathematical concepts applied in ocean mapping in semester three. This semester also marks the point in the program where students begin enrolling in the Bachelor of Technology (B. Tech) courses required for the Degree.
- Complete introductory courses in Optical Remote Sensing, Sidescan Sonar, Geophysical Remote Sensing and Multibeam Sonar in semester four, which focuses on the theory and practical application of the technology in terms of data collection techniques, installation and deployment, data analysis interpretation and dissemination. Students will also complete a Linear Algebra and Spherical Trigonometry course.
- Following semester four, a five-week technical session will be completed whereby the students become actively engaged in intermediate techniques associated with field data collection, system design, implementation techniques and best practices utilized for data processing and visualization. In addition, students will also complete a series of short courses associated with Marine Safety, including STCW-Basic Safety, ROC-MC and WHMIS, and Marine Basic First Aid, all of which are essential when working within a marine environment.

The third year of the Ocean Mapping program marks the beginning of the more advanced ocean mapping techniques whereby students learn methods and techniques used in the fields of data design and management as well as overall system integration and performance. Students will:

- Complete advanced courses in Geographic Database Design and Management, Shipboard Systems Integration and System Performance in semester five. Students will also complete an Advanced Remote Sensing course focusing on Thermal Imagery and RADAR technology as well as continuing on with the Bachelor of Technology Degree requirements.
- Complete an additional ocean-related management course associated with the International Law of the Sea as well as learn the theory and application of the internet as a means of dissemination for marine data through an advanced web-based mapping course in semester six. Students will also learn advanced surveying practices in terms of data acquisition and analysis.

JOINT DIPLOMA OF TECHNOLOGY/BACHELOR OF TECHNOLOGY-OCEAN MAPPING

- Following semester six, a five-week technical session will be completed whereby the students become actively engaged in advanced techniques associated with field data collection, advanced system design and implementation techniques and best practices as well as advanced techniques utilized for data processing and visualization. In addition, students will also complete a series of short courses associated with Nautical Science and Marine Safety. The Nautical Science course will cover introductory navigation concepts and techniques. The Marine Safety courses will focus on Confined Space Awareness, Small Vessel Operator Proficiency and ROV Pilot Training, all of which are very relevant when working within the marine environment.
- Immediately following the third Technical Session, students will begin a comprehensive work term placement component whereby the students are fully immersed with an ocean mapping related company and performing the tasks required within industry. The duration of the work term is flexible by design as it will reflect the individual job duties of each student. In any event, students are required to complete either an eight-week work term or a total of 320 hours to fulfill the requirements for successful completion.

The fourth and final year of the Ocean Mapping program builds on all the fundamental concepts learned throughout the duration of the program and allows the students to fully immerse themselves in the project management side of the technology. Students will:

- Complete an ocean management data management project course in semester seven that will link all the concepts and techniques together through the design, development and dissemination of a relevant trend in ocean mapping. The topics are wide in scope and can range from intermediate data collection techniques and practices to the development and implementation of commercial software. Students will complete a Nautical Chart Production course adhering to acceptable hydrographic standards as well as a Meteorology course to round out the students' expertise. Students will also begin their technical project associated with the Bachelor of Technology requirements.

Characteristics of Graduates:

Successful graduates of the Ocean Mapping Program will have a proven work ethic and an excellent understanding of all aspects of ocean mapping technology, preparing them for employment within a variety of fields within ocean mapping.

Accreditation Status

The Ocean Mapping program is in the process of receiving accreditation from two different governing bodies. The Ocean Mapping Program will be accredited by the Canadian Technology Accreditation Board (CTAB) for national recognition in the field of Surveying and Geomatics. The Ocean Mapping Program is a Degree program and will also be incorporating the Bachelor of Technology (B. Tech) components from Memorial University of Newfoundland and Labrador (MUN), indicating its Degree recognition. Additional accreditation will be pursued and attained upon successful implementation of the full program.

PROGRAM ENTRY

As per the Marine Institutes minimum entrance requirements for Diploma of Technology Programs, Refer to the Admissions Section of the Marine Institute Calendar.

- Applicants should possess strong skills in both mathematics and science to enter this program

PROGRAM STRUCTURE

The Ocean Mapping Program is a four year program that consists of:

- Eight (8) thirteen-week academic terms
- Three (3) five-week technical sessions and One (1) work term.
- Sixty (60) courses

PROGRAM OUTLINE

TERM 1

CHEM 1100 (Chemistry)
CMSK 1104 (Introduction to Technical Reporting)
CPSK 1102 (Introduction to Programming)
ELTK 1100 (Electrotechnology)
MATH 1101 (Introduction to Calculus)
PHYS 1100 (Physics)
SFTY 1104 (WHMIS)

TERM 2

CHEM 1200 (Chemistry)
ELTK 1200 (Electrotechnology)
MATH 1200 (Calculus)
OMAP 2000 (Acoustics I - Underwater Acoustics Applications)
ONGR 1200 (Descriptive Oceanography)
PHYS 1200 (Physics)

TECHNICAL SESSION 1

GEOG 1300 (Surveying and GPS)
ONGR 1300 (Hydrography and Tides)
ONGR 1301 (Instrumentation Oceanography)

TERM 3

ELTR 2118 (Introduction to Computers and Networking)
ENGLISH 1000 Level Course
GEOG 3101 (Mapping and GIS)
MATH 2101 (Advanced Calculus)
ONGR 2107 (Marine Geology and Geophysics)
STAT 2108 (Applied Statistics)

TERM 4

GEOG 3200 (Remote Sensing)
MATH 2203 (Linear Algebra)
MATH 2204 (Spherical Trigonometry)
MSTM 4090 (Introduction to Technology)
OMAP 2200 (Sidescan Sonar and Seismic Remote Sensing)
OMAP 2201 (Multibeam Sonar)

TECHNICAL SESSION II

NASC 2107 (ROC-MC)
OMAP 2300 (Field Deployment and Data Collection)
OMAP 2301 (Data Processing and Visualization)
SFTY 1102 (Marine Basic First Aid)
SFTY 1114 (STCW Basic Safety - STCW'95 VI/I)

TERM 5

GEOG 3102 (Geographic Database Design and Management)
GEOG 3103 (Advanced Remote Sensing)
MSTM 4010 (Assessment & Implementation of Technology)
MSTM 4060 (Advanced Technical Communications)
OMAP 3100 (Shipboard System Integration)
OMAP 3101 (System Performance)

TERM 6

GEOG 3201 (Advanced Surveying Practices)
GEOG 3202 (Web-based Mapping)
OMAP 3200 (International Law of the Sea: Geomatics Perspectives)
OMAP 3201 (Applied Acoustic Data Analysis)
MSTM 4012 (Occupational Health and Safety Legislation and Management)
MSTM 4040 (Project Management for Technologists)

TECHNICAL SESSION III

NASC 3309 (Introduction to Navigation)
OMAP 3300 (Advanced Survey Design and Implementation)
OMAP 3301 (Advanced Data Processing and Visualization)
ROVO 3300 (Remotely Operated Vehicle Survey Operations)
SFTY 1124 (Confined Space Entry Awareness)
SFTY 1125 (Small Vessel Operator Proficiency)

WORK TERM 1

WKTm 3302 (to follow Technical Session)

TERM 7

GEOG 3401 (Nautical Chart Production)
MSTM 4014 (Technology and the Environment)
MSTM 4020 (Economic Management for Technologists)
MSTM 4030 (Technology in the Human Context)
MSTM 4100 (Technical Project and Report I)
OMAP 3400 (Ocean Mapping Data Management)

TERM 8

MSTM 4200 (Technical Project and Report II)
MSTM 4070 (Special Topics in Technology)
OMAP 3500 (Advanced Tides and Water Levels)
ONGR 3500 (Weather and Climate)
B. Tech Elective

PHYSICAL REQUIREMENTS

Students will be required to pass a Marine Institute medical.

EVALUATION

Evaluation of the Ocean Mapping Program will occur on a regular basis to ensure that all academic and accreditation criteria have been met and to ensure that the program is designed and implemented to represent the optimal education stream for the students, faculty, school and Institute.

CAREERS

Information about the industry

- Ocean Mapping graduates will be entering a broad and diverse field that has a variety of specific niches that require the services and expertise within this program and through their training, the students will easily and seamlessly fit in to any business model. Until now, there was never a formal job title of Ocean Mapper because the typical roles were traditionally performed by a group of people. Graduating as an Ocean Mapper, students will be technologically literate and competent in all the sectors of the industry, thus making them extremely employable and attractive to local, national and international companies.

Types of companies graduate will find work

- Graduates of this program are expected to avail of careers in a variety of areas, ranging from the private sectors and consultant agencies, provincial and federal government departments as well as educational and research institutions. One of the great aspects of the program is that graduates can seek employment either at sea or ashore or a combination of both because the knowledge and expertise they have attained will apply to both environments. Graduates may find themselves at sea on a survey vessel operating equipment to collect process and analyze information. Many opportunities also exist where graduates can work ashore in a scientific capacity, analyzing and presenting data

Types of job titles

- Ocean Mapper
- Spatial Database Analyst
- Special Projects Team Lead
- Hydrographic Surveyor
- Database Administrator
- Computer Programmer
- GIS Technician / Specialist
- Web Developer
- Systems Analyst
- Remote Sensing Specialist
- Instrumentation Oceanographer
- Applied Researcher
- Project Manager
- Computer Network Specialist

Location

Locally (Newfoundland and Labrador), Nationally (Canada), and Internationally (Worldwide)

SAMPLE JOB DESCRIPTION

- Typical activities for an Ocean Mapper graduate are as follows:

Spatial Database Administrator

- Experience with Oracle or SQL Server installation, configuration and administration, with strong abilities using either Oracle Spatial or SQL Server Geography and Geometry data types.
- Spatial Database Backup and Recovery
- Archive Log Management
- ESRI ArcSDE tuning and configuration
- Strong understanding of the geodatabase, including the types and their usage
- Experience with raster and vector data loading with change control and optimization
- Ability to install and configure a Windows environment
- Ability to design, configure and maintain a spatial data warehouse
- Ability to handle large quantities of data in a seamless environment.

Remote Sensing Specialist

- Competence in using ArcGIS Desktop and Server including processing and manipulation of a wide variety of spatial data, building databases, spatial analysis, 3D visualisations & map production;
- Experience in Remote Sensing techniques, such as classification, feature extraction and image analysis using Idrisi Taiga software or equivalent;
- Competence in digital Photogrammetry and orthophoto production, preferably using PCI Geomatica or equivalent
- Familiarity with sub-metre GPS applications, including data acquisition and post-processing;
- Abilities in a relevant language such as C++, Python etc an advantage;
- Experience with web approaches, interfaces, & protocols such as html, xml, css, php, etc;
- Familiarity with implementation of OGC compliant standards such as WMS, WFS, etc;
- Sound understanding of computer networking, client-server and database technologies.

GIS Technician / Specialist

- Work with the project management team to plan and implement new systems within a marine environment
- Deploy marine applications onto web servers and configure systems based on identified requirements.
- Maintain a high implementation quality standard through attention to detail and thorough review and testing procedures.
- Deliver written material as need to summarize implementations, report on status or provide clients with how-to instructions
- Support existing client implementations by troubleshooting and diagnosing issues, providing clients with guidance and feedback and applying hot fixes where necessary.
- Provide technical guidance regarding the implementation of ArcGIS Server and integration requirements within marine-based solutions
- Install and manage ArcGIS Server systems
- Work with clients on the configuration of Map Services, layer definitions, cartography, thematic map definitions, and map server performance tuning.
- Process/prepare data for web sites, configure map server settings, and create static HTML content.

MISSION

The underwater vehicle program is designed to:

- Provide graduates with solid technical skills to operate, maintain and repair all classes of underwater vehicles.
- Train students in ROV deployment methodologies that encompass safety, inspection and operation.
- Prepare students for careers in offshore oil & gas, nuclear, military, law enforcement, pipeline and cable industries as a substitute to diving operations.

PROGRAM OVERVIEW

The Underwater vehicle program is designed to prepare graduates to enter the workforce with a sound background in electronics, hydraulics, electrical and workplace safety.

Main Areas of Study

- In the first year, students begin studying physics, chemistry, math and introductory courses to programming and electrical technology. Engineering graphics and technical reporting is another feature. ROV systems are introduced very early and a descriptive oceanography course is a valuable addition.
- Following term 2 of the first year, the 5 week technical session teaches hands on experience with electronic fabrication and control electronics used in ROV.
- The second year focuses on various industrial electronics & controls, fluid mechanics and hydraulics related to ROV operations. A workshop practice adds a practical dimension to the theoretical knowledge. The term 4 in the second year concentrates on ROV launch, recovery and maintenance that form major part of work for the graduates in the ROV industry. On the electrical side, interfacing techniques, data communication and underwater acoustics help understanding the communication in ROVs.
- Following term 4 is a 5 week tech session where students get to do hands on piloting ROVs in the simulator and safety training getting ready for an employment as a technician in the ROV industry.
- Year Two and Three of the UV program build on the ROV pilot fundamentals to extend their knowledge to include ROV and AUV Design. It also includes study in advanced electronics, mechanics and system design. At the same time students are introduced to business and management skills as well as project management.

Characteristics of Graduates

- Successful graduates will have a proven work ethic and an excellent understanding of ROV/AUV operations and design including piloting, hydraulics and work safety preparing them for initial employment as a ROV/AUV operator/designer.

Accreditation Status

- The BTech (UV) program is intended to meet the criteria from the Canadian Technology Accreditation Board (CTAB), and upon graduation of the initial BTech (UV) class, CTAB accreditation will be pursued. Graduates from the program are expected to avail of careers in the offshore oil and gas, nuclear, military, law enforcement, pipeline, and cable industries, as a substitute for or supplement to commercial (manned) diving operations
- Graduates are eligible for Diver Certification Board of Canada certification as an ROV Operator.

PROGRAM ENTRY

Students admitted to the BTech (UV) program must meet the requirements for both Memorial University and the Marine Institute. They are also required to successfully complete a CAPP medical.

PROGRAM STRUCTURE

Length of the Program

- 4 academic years

Number of semesters

- Eight (8) 13 week academic semesters, two technical sessions and a work term

Number of courses

- 58 courses in 4 years of study

Work terms

- Students do a work term at the end of semester 4

Topics covered in each semester

- Refer to program calendar – Main areas of study

Physical requirements

- Students will be required to complete a CAPP medical

JOINT DIPLOMA OF TECHNOLOGY/BACHELOR OF TECHNOLOGY- UNDERWATER VEHICLES

PROGRAM OUTLINE

TERM 1

CHEM 1100 (Chemistry)
CMSK 1104 (Introduction to Technical Reporting)
CPSK 1102 (Introduction to Programming)
ELTK 1100 (Electrotechnology)
MATH 1101 (Introduction to Calculus)
PHYS 1100 (Physics)
SFTY 1104 (WHMIS)

TERM 2

ELTK 1200 (Electrotechnology)
ELTR 1301 (Control Electronics for ROV)
ENGR 1202 (Engineering Graphics)
MATH 1200 (Calculus)
ONGR 1200 (Descriptive Oceanography)
PHYS 1200 (Physics)
ROVO 2200 (Introduction to ROV Systems)

TECHNICAL SESSION 1

ELTK 1303 (Electrical Machines & Power Systems)
ELTR 1104 (Electronic Fabrication Techniques)
ONGR 1301 (Instrumentation Oceanography)

TERM 3

ELTK 2118 (High Voltage Safety)
ELTR 2102 (Digital Logic)
ELTR 2116 (Industrial Electronic and Controls)
FLDS 2108 (Introduction to Fluid Mechanics & Hydraulics)
ROVO 2201 (ROV Operations)
WKPR 2118 (Workshop Practice)

TERM 4

ELTK 2200 (Marine Electrical Troubleshooting)
ELTR 2115 (Data Communications)
ELTR 2214 (Interfacing)
OMAP 2000 (Underwater Acoustic Applications)
ROVO 2202 (ROV Maintenance)
ROVO 2204 (Launch & Recovery Systems or LARS)

TECHNICAL SESSION II

ROVO 2300 (ROV Ship Interaction)
ROVO 2301 (ROV Pilot Training)
ROVO 2302 (Simulator Training)
SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))
SFTY 1128 (BST - Basic Survival Training)
SFTY 2101 (H2S Alive)
SFTY 2301 (Fall Protection)

WORK TERM

WKTM 1105 (Work Term)

TERM 5

ELTR 2202 (Analog Transistor Circuits)
ELTR 3122 (Embedded Controllers)
English 1000 Level Course
MSTM 4014 (Technology and the Environment)
MSTM 4090 (Introduction to Technology)
STAT 2108 (Applied Statistics)

TERM 6

ELTR 3120 (Integrated Circuits)
MATH 2101 (Advanced Calculus)
MSTM 4040 (Project Management for Technologists)
MSTM 4060 (Advanced Technical Communications)
ROVO 3200 (Automated Underwater Vehicle Design & Operations)
WKPR 1117 (Machine Shop I)
B.Tech Elective

TERM 7

ELTR 3104 (Digital Signal Processing)
ELTR 3211 (Control Devices & Systems)
MECH 2102 (Mechanics)
MSTM 4020 (Economic Management for Technologists)
MSTM 4030 (Technology in the Human Context)
MSTM 4100 (Technical Project and Report I)

TERM 8

MSTM 4010 (Assessment and Implementation of Technology)
MSTM 4012 (Occupational Health and Safety Legislation and Management)
MSTM 4070 (Special Topics in Technology)
MSTM 4200 (Technical Project and Report II)
TKPR 3500 (Electro-Mechanical Fabrication Project)

CAREERS

Remotely Operated Vehicles (ROV) and Autonomous Underwater Vehicles (AUV) are used most notably in the offshore oil and gas, nuclear, military, law enforcement, pipeline, and cable industries, as a substitute or supplement to commercial (manned) diving operations. These vehicles are especially suited for hazardous and difficult underwater operations.

Due to the increased complexity in ROV/AUV operations, offshore operators have started to demand a higher level of quality assurance for ROV operators. Skills required by ROV/AUV operators include piloting, hydraulics, electronics, electrical, and general workplace safety. There are few educational institutions in the world that offer ROV training.

Types of companies graduate will find work

- Graduates of the program typically find work in AUV/ROV manufacturing companies, marine offshore industries, nuclear, military, law enforcement, and pipeline and cable industries.

Types of job titles

See sample job description

Location

The industry is a global one and graduates should expect to work in various locations around the world.

SAMPLE JOB DESCRIPTION

ROV Pilot/Technician

- Repair and maintain Remotely Operated Vehicles and the associated support systems including Tether Management Systems, Winch and Launch and Recovery Systems, and Power Generation Systems
- Perform electrical, electronic, hydraulic and mechanical maintenance and repair duties for a multitude of electro/hydraulic/mechanical systems
- Perform piloting duties for a multitude of subsea tasks including general visual inspections, survey, specialty tooling operation, construction, installation, pipeline and cable laying, search, salvage and recovery, and offshore oil drilling support
- Perform support duties including navigation and sonar operation, multimedia recording and record keeping, manipulator operation, inventory, planned and preventative maintenance, updating system specifications, logs and registers
- Opportunity to work globally

ROV Supervisor

- Act as team lead for operation, maintenance, and repair of Remotely Operated Vehicle
- Plan ROV missions
- Act as liaison between ROV crew and vessel
- Accept responsibility for safe and effective ROV operations
- Accepts responsibility for documentation of ROV operations
- Participates in daily planning of offshore installation activity

ROV Superintendent

- Engage in project planning for acquisition and deployment of Remotely Operated Vehicles and crews
- Interface with clients to determine ROV requirements and activity
- Present clients with optimal operational scenarios
- Interact with ROV Supervisor to ensure efficient operations

POST GRADUATE CERTIFICATE - FOOD SAFETY

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

Food Safety consists of four courses: one required (core) course and three electives chosen from an approved list with at least two electives selected from category A. Learning online will allow you to interact with a virtual community consisting of other food industry professionals and your instructor.

Required Course:

- MIPG 4113 (Introduction to Food Safety)

Category A Elective Courses

- MIPG 4102 (Food Safety Systems)
- MIPG 4114 (Fundamentals of Canadian Food Laws and Regulations)
- MIPG 4115 (Foodborne Illness and Food Toxicology)
- MIPG 4116 (Food Sanitation)

Category B Elective Courses

- MIPG 4100 (Quality Management)
- MIPG 4104 (Quality Assurance in the Food Industry)
- MIPG 4105 (Introduction to Process Control)
- MIPG 4106 (Project Management Fundamentals)
- MIPG 4107 (EU Food Law)
- MIPG 4108 (ISO *Management Systems*)

The elective course selection will expand to include a wide range of disciplines as the program progresses.

PROGRAM HIGHLIGHTS

This is a post-graduate-level program designed for students with a background in science or technology to gain knowledge of food safety. After completing the program, students will have gained an understanding of food safety principles and how they can be applied to their particular area of industry. Graduates from the program are expected to avail of careers in the private and public sectors..

COURSE DESCRIPTIONS

settings will find the course a useful guide in understanding and implementing total quality in existing organizations. The course focuses primarily on the theories, principles, and various elements within the total quality approach to quality management.

Total Quality Approach to Quality Management; Quality and Global Competitiveness; Strategic Management; Planning and Execution for Competitive Advantage; Quality Management, Ethics & Corporate Social Responsibility; Partnering and Strategic Alliances; Quality Culture; Leadership and Change; Customer Satisfaction, Retention, and Loyalty; Employee Empowerment; Team Building and Teamwork; Effective Communication; Education and Training; ISO 9000 and Total Quality; The Relationship; Overview of Total Quality Tools; Continual Improvement; Implementing Total Quality

Schedule - Web-based instruction: 39 hours

MIPG 4102M - Food Safety Systems - This course is designed to provide participants with an understanding of the various food safety systems that exist within the Canadian food industry.

Food Law; Food Plant Sanitation; Hazard Analysis Critical Control Point; Food Safety Enhancement Program; Quality Management Program; Food Recalls; Food Security; Food Traceability

Schedule - Web-based instruction: 39 hours

MIPG 4104M - Quality Assurance in the Food Industry

- This course is designed to provide participants with an understanding of the various elements necessary in the design and implementation of a quality assurance program for the food industry.

Quality and the Food Industry; Quality Assurance Program; Specifications; Raw Material/Ingredient Supplier Certification; Process Control; Product Quality Audits; Quality Assurance Documentation System; ISO and the Food Industry

Schedule - Web-based instruction: 39 hours

MIPG 4105M - Introduction to Process Control - This course is designed to provide participants with an understanding of the various elements necessary in the design and implementation of process control.

Introduction to Statistical Quality Control; Statistical Methods Useful in Quality Control; Basic Methods of Statistical Process Control; Control Charts for Variables; Control Charts for Attributes; Process and Measurement System Capability Analysis; Acceptance Sampling

Prerequisite - A College / University level Introductory Statistics Course

Schedule - Web-based instruction: 39 hours

MIPG 4106M - Project Management Fundamentals - This is a course in the fundamentals of the profession of Project Management. The objective of this course is to introduce students to the processes and tools involved in initiating, planning, executing, controlling, and closing projects.

The Project Management Context; Project Leadership; Scope Management; Risk Management; Selection and Budgeting; Cost Estimation; Project Scheduling; Resource Management; Project Performance Monitoring and Evaluation; Project Closeout and Termination

Schedule - Web-based instruction: 39 hours

MIPG 4107M - European Food Law - This course will provide participants with a thorough and in-depth understanding of the elements of European (EU) Food Law including aspects of food science, health, law, ethics, policy, economics and politics.

European Union and Principles of EU Food Regulatory Affairs; Trade and Free Movement of Food in the EU; International Influences on EU Food Law; European Food Safety Authority; Precautionary Principle; EU Food Hygiene, Food Safety Legislation and Food Quality; EU Food Standards, Food Labeling and Naming of Foods; Nutritional Food Law in EU; Food Additives; Food and Health Functional Foods; Genetic Modification of Foods; Organic Food Production; Artisan and Specialty Foods

Schedule - Web-based instruction: 39 hours

MIPG 4108M - ISO Management Systems - This course is designed to introduce internationally developed management systems to students. The course provides learning opportunities around the application of these systems and the procedures followed for their implementation in different firms and institutions.

Background; ISO 9000 Quality Management System; ISO 14000 Environmental Management System; OHSAS 18000 Occupational Health and Safety Management System

Schedule - Web-based instruction: 39 hours

MIPG 4113M - Introduction to Food Safety - This course will introduce students to the fundamental control measures required to produce safe food as well as an overview of food safety regulation, food microbiology, food toxicology and an introduction to the safety of genetically modified foods.

Fundamentals of Food Safety; Food Microbiology and Food Safety; Food Toxicology and Food Safety; Genetically Engineered Foods and Food Safety

Schedule - Web-based instruction: 39 hours

MIPG 4114M - Fundamentals of Canadian Food Laws and Regulations - This course is designed to introduce the major topics in Canadian food laws and regulations that are fundamental in the manufacturing and trade of safe and compliant food commodities. While Canadian food laws and regulations are the primary focus of this course, some international food laws and regulations will also be introduced.

Introduction to Canadian Legal System; Canadian Food Inspection Agency (CFIA); Federal Food Acts and Regulations; Additional Federal Departments and Agencies; Provincial Food Laws and Regulations; International Food Laws and Regulations; Genetically Engineered (GE) Food

Schedule - Web-based instruction: 39 hours

MIPG 4115M – Foodborne Illness and Food Toxicology – This course is designed to enable the student to gain knowledge of the biological and chemical hazards present in foods and their effect on human health.

Principles of Food Toxicology, Biotransformations, Chemical Carcinogenesis, Natural Toxicants in Animal Foodstuffs, Toxic Photochemicals, Environmental Toxicants, Animal Drug Residues, Food additives, Toxicants formed during Food processing, Important facts of Foodborne Diseases, Foodborne Intoxications, Foodborne Infections, Foodborne Toxicoinfections, Parasites and Algal Toxins, Food Insensitivities

Schedule - Web-based instruction: 39 hours

MIPG 4116M - Food Sanitation - This course is designed to introduce students to the various aspects of food sanitation and to provide students the necessary tools to design, and implement an effective sanitation program.

Sanitation and the Food Industry; Microorganisms; Allergens; Personal Hygiene; Pest and Pest Control; Cleaning and Sanitizing; Food Plant and Equipment Design; Sanitation of Incoming Materials; Water Sanitation; Waste Treatment; Governmental Food Regulations

Schedule - Web-based instruction: 39 hours

Evaluation:

Students in the Post-graduate Certificate in Food Safety must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program. Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

CAREERS

Professionals will enhance their careers in the private and public sectors specializing in . in food technology/ production, food safety, quality management, project management and quality assurance.

POST GRADUATE CERTIFICATE - QUALITY MANAGEMENT

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

This Web-based program consists of four courses: one core and three electives. Learning online will allow you to interact with a virtual community consisting of other quality professionals and your instructor.

Required Course:

- MIPG 4100M - Quality Management

Elective Courses:

- MIPG 4101M - Technical Communication for Quality Management
- MIPG 4102M - Food Safety Systems
- MIPG 4103M - Technical Problem Solving
- MIPG 4104M - Quality Assurance in the Food Industry
- MIPG 4105M - Introduction to Process Control
- MIPG 4106M - Project Management Fundamentals
- MIPG 4107M - European Food Law
- MIPG 4108M - ISO Management Systems

The elective course selection will expand to include a wide range of disciplines as the program progresses.

PROGRAM HIGHLIGHTS

This is a post-graduate-level program designed to broaden your understanding of quality management practices and how they apply to your industry. The courses within the program are delivered online in a semester-based format, and allow for flexibility around work committees.

COURSE DESCRIPTIONS

MIPG 4100M - Quality Management - Practitioners in corporate settings will find the course a useful guide in understanding and implementing total quality in existing organizations. The course focuses primarily on the theories, principles, and various elements within the total quality approach to quality management.

Total Quality Approach to Quality Management; Quality and Global Competitiveness; Strategic Management; Planning and Execution for Competitive Advantage; Quality Management, Ethics & Corporate Social Responsibility; Partnering and Strategic Alliances; Quality Culture; Leadership and Change; Customer Satisfaction, Retention, and Loyalty; Employee Empowerment; Team Building and Teamwork; Effective Communication; Education and Training; ISO 9000 and Total Quality; The Relationship; Overview of Total Quality Tools; Continual Improvement; Implementing Total Quality

Schedule - Web-based instruction: 39 hours

MIPG 4101M - Technical Communication for Quality Management - This course is intended to enable students to enhance their technical communication skills.

Students will apply technical communication fundamentals to the development of technical proposals, reports, presentations and documents, preferably related to quality management, if possible.

Technical Communication; Technical Research; Technical Proposals; Technical Applications; Technical Reports; Technical Graphics; Technical Presentations

Schedule - Web-based instruction: 39 hours

MIPG 4102M - Food Safety Systems - This course is designed to provide participants with an understanding of the various food safety systems that exist within the Canadian food industry.

Food Law; Food Plant Sanitation; Hazard Analysis Critical Control Point; Food Safety Enhancement Program; Quality Management Program; Food Recalls; Food Security; Food Traceability

Schedule - Web-based instruction: 39 hours

MIPG 4103M - Technical Problem Solving - The course is designed to provide participants with various creative problem-solving techniques that are used to analyze and solve technical problems that occur in industry. It fosters both the use of creativity and technical knowledge to increase an individual's problem solving skills.

Problem Solving and People; Problem Definition; Generating Solutions; Decision Making; Implementation; Evaluation; Crisis Management and Crisis Leadership

Schedule - Web-based instruction: 39 hours.

MIPG 4104M - Quality Assurance in the Food Industry - This course is designed to provide participants with an understanding of the various elements necessary in the design and implementation of a quality assurance program for the food industry.

Quality and the Food Industry; Quality Assurance Program; Specifications; Raw Material/Ingredient Supplier Certification; Process Control; Product Quality Audits; Quality Assurance Documentation System; ISO and the Food Industry

Schedule - Web-based instruction: 39 hours

MIPG 4105M - Introduction to Process Control - This course is designed to provide participants with an understanding of the various elements necessary in the design and implementation of process control.

Introduction to Statistical Quality Control; Statistical Methods Useful in Quality Control; Basic Methods of Statistical Process Control; Control Charts for Variables; Control Charts for Attributes; Process and Measurement System Capability Analysis; Acceptance Sampling

Prerequisite - A College / University level Introductory Statistics Course

Schedule - Web-based instruction: 39 hours

MIPG 4106M - Project Management Fundamentals - This is a course in the fundamentals of the profession of Project Management. The objective of this course is to introduce students to the processes and tools involved in initiating, planning, executing, controlling, and closing projects.

The Project Management Context; Project Leadership; Scope Management; Risk Management; Selection and Budgeting; Cost Estimation; Project Scheduling; Resource Management; Project Performance Monitoring and Evaluation; Project Closeout and Termination

Schedule - Web-based instruction: 39 hours

MIPG 4107M - European Food Law - This course will provide participants with a through and in-depth understanding of the elements of European (EU) Food Law including aspects of food science, health, law, ethics, policy, economics and politics.

European Union and Principles of EU Food Regulatory Affairs; Trade and Free Movement of Food in the EU; International Influences on EU Food Law; European Food Safety Authority; Precautionary Principle; EU Food Hygiene, Food Safety Legislation and Food Quality; EU Food Standards, Food Labeling and Naming of Foods; Nutritional Food Law in EU; Food Additives; Food and Health Functional Foods; Genetic Modification of Foods; Organic Food Production; Artisan and Specialty Foods

Schedule - Web-based instruction: 39 hours

MIPG 4108M - ISO Management Systems - This course is designed to introduce internationally developed management systems to students. The course provides learning opportunities around the application of these systems and the procedures followed for their implementation in different firms and institutions.

Background; ISO 9000 Quality Management System; ISO 14000 Environmental Management System; OHSAS 18000 Occupational Health and Safety Management System

Schedule - Web-based instruction: 39 hours

Evaluation:

Students in the Post-graduate Certificate in Quality Management must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program. Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

CAREERS

Professionals will enhance their careers in the private and public sectors specializing in quality management, project management, quality assurance, and production.

ADVANCED DIPLOMA - SUSTAINABLE AQUACULTURE

This program is designed to provide students, from a wide range of academic disciplines, with the education, training and management level skills required to participate in aquaculture development.

The goals of this program are to provide students with:

- education and training for employment in a wide variety of fish and shellfish culture vocations.
- management level training needed to ensure the logical & sustainable development of aquaculture industries.

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

This program is taught by a combination of lectures, practical sessions on finfish and shellfish farms, fieldwork and participation in aquaculture workshops. Faculty expertise is supplemented by guest lecturers from industry, government and aquaculture research institutions.

During the first semester, in addition to fish health, finfish, shellfish culture, practical facility maintenance and animal husbandry and site selection, students also receive training in business-related topics such as marketing and research proposal development. A study tour to local aquaculture sites is also included in the first semester as well as several practical field sessions.

The second semester includes courses in finfish nutrition, statistics, business management, aquaculture & the environment, aquaculture engineering and handling and processing aquaculture products. During this semester students also complete an in-depth, industry relevant research project designed to develop skills in experimental design, fish handling and aquaculture systems operations. Students also complete practical aquaculture courses which are designed to develop skills in net making, boating safety, seamanship, and marine emergency duties.

The third semester consists of a 13 - week aquaculture work term. Students work on finfish and shellfish farms or within laboratories and support agencies. Linkages for work terms have been established in Canada, the United States, South America, Australia, and Europe and on international development projects.

Evaluation:

Students in Advanced Diplomas must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

Credit Earned: Advanced Diploma in Sustainable Aquaculture

1 Year: 2 semesters plus a 3 month work-term placement.

Normal Start: Fall

Contact: Admissions Officer
(709) 778-0380
1-800-563-5799 (ext. 380)
email: admissions@mi.mun.ca

Web URL: [www.mi.mun.ca/program pages/Advanced Diploma Sustainable Aquaculture](http://www.mi.mun.ca/program_pages/Advanced_Diploma_Sustainable_Aquaculture)

PROGRAM OUTLINE

Term 1

AQUA 4100 (Aquaculture Seminar Series)
AQUA 4102 (Shellfish Culture)
AQUA 4103 (Fish Health)
AQUA 4107 (Finfish Culture)
AQUA 4108 (Site Selection)
AQUA 4112 (Practical Facility Maintenance and Animal Husbandry)
BSMG 4102 (Marketing Aquaculture Products)
SFTY 1104 (WHMIS)
TKPR 411A (Technical Report)
WKTM 1002 (Work Term Preparation Seminar)

Term 2

AQUA 4101 (Handling & Processing Aquaculture Products)
AQUA 4104 (Fish Nutrition)
AQUA 4111 (Aquaculture and the Environment)
AQUA 4113 (Aquaculture Engineering)
*AQUA 4114 (Ropework and Net Mending)
BSMG 4104 (Business Management)
*SFTY 1101 (First Aid)
SFTY 1125 (Small Vessel Operator Proficiency)
*SFTY 2102 (MED A3)
STAT 4105 (Statistics - Aquaculture)
TKPR 411B (Technical Report)

*** Delivered between Term 2 and 3**

Term 3

WKTM 4112 (Work Term - Advanced Diploma in Sustainable Aquaculture)

PROGRAM HIGHLIGHTS

This program is designed to graduate students with a variety of strengths that can be used in a large array of employment areas.

- The development of practical and technical skills is emphasized throughout the program. Students are exposed to operations on nearby aquaculture sites and receive practical training during laboratory and field sessions.
- Facilities at the Marine Institute have been established in support of a varied teaching and applied research program. A modern aquaculture facility on the main campus consists of a freshwater culture lab, marine culture lab, quarantine / fish health lab, and a live food culture lab.
- Students also have access to food science laboratories, engineering workshops, net loft, flume tank and a registered food processing plant.
- Aquaculture faculty and staff maintain close links with the aquaculture industry through advisory work and research activities. Current research activities are focused on fish nutrition, feed development, shellfish culture techniques, and fish and shellfish health.

A thesis based Masters of Science in Aquaculture Degree is offered by Memorial University. Students in this program may be required to complete selected courses from the Advanced Diploma in Sustainable Aquaculture. Persons wishing to apply for the M.Sc. Program must apply directly to Memorial's School of Graduate Studies.

CAREERS

The goal of the Advanced Diploma in Sustainable Aquaculture program is to prepare students for careers as aquaculture managers, developers and researchers.

Graduates of the program have gained employment in a range of aquaculture and related fields. These include fish farm management, work as scientists and aquaculture technologists, aquaculture instructors, and work on aquaculture projects in both the developed and developing world.

Graduates of this program also find employment in the following areas: fish farm management, aquaculture advisory agencies, federal and provincial government departments, environmental monitoring, fish health suppliers, consulting companies, fish food manufacturers and aquaculture equipment manufacturers and distributors.

Career opportunities are available in Newfoundland and Labrador, Canada and Internationally.

ADVANCED DIPLOMA - FOOD SAFETY

This program is designed to:

- provide a strong technical education in the areas of food safety and food inspection
- prepare students for employment in the food industry and regulatory agencies
- develop technical and analytical skills in food safety and food inspection

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

The program is divided into the following terms:

Term One:

Students will be required to take courses in Applied Statistics, Food Microbiology, Food Processing, Food Safety and Sanitation, and Food Chemistry.

Term Two:

The second term continues the study of food safety and includes such courses as Food Law, Foodborne Diseases, Food Inspection Techniques, Management Principles, and Food Toxicology. A technical project course allows for in depth study of an area of special interest.

Term Three:

Students will find placements in pertinent industries or agencies for practical experience.

PROGRAM HIGHLIGHTS

- This program emphasizes the food quality/assurance component of the industry together with food safety.
- Students will experience a range of teaching methods including lectures, tutorials, laboratories, seminars and study tours.

EVALUATION:

Students in Advanced Diplomas must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

PROGRAM OUTLINE

Term 1

BIOL 4104 (Food Microbiology)
CHEM 4102 (Food Chemistry)
FDTE 4105 (Food Safety & Sanitation)
FDTE 4111 (Food Processing)
STAT 4106 (Applied Statistics)
TKPR 413A (Technical Project)
WKTM 1002 (Work Term Preparation Seminar)

Term 2

BSMG 4111 (Fundamentals of Canadian Food Laws and Regulations)
BSMG 4112 (Management Principles)
*FDTE 2118 (Canned Foods and Thermal Processing)
FDTE 3102 (Food Safety Enhancement Program/Hazard Analysis Critical Control Point)
FDTE 3104 (Quality Management Program)
FDTE 3108 (Global Food Safety Initiatives)
FDTE 4102 (Food Inspection Techniques)
FDTE 4104 (FoodBorne Diseases - Toxicology)
TKPR 413B (Technical Project)

Term 3

WKTM 4111 (Work Term - Advanced Diploma in Food Safety)

*** Taught 5 consecutive days after end of Semester**

Credit Earned: Advanced Diploma - Food Safety

1 Year: 2 Semesters and 1 Work Term Session

Normal Start: Fall

Contact: Admissions Officer
(709) 778-0380
1-800-563-5799 (ext. 380)
email: admissions@mi.mun.ca

CAREERS

Graduates of this program will find excellent opportunities for challenging and rewarding employment in production, quality assurance, food plant inspection services, food analysis laboratories, regulatory agencies and many other interesting careers.

Sample Job Descriptions:

- Responsible for the plant sanitation program
- Quality systems management, H.A.C.C.P., microbiological analysis
- Supervise all Q.A. functions

The Marine Institute Advanced Diploma in Integrated Coastal and Ocean Management allows graduates of degree and diploma of technology programs to specialize in the multi-disciplinary elements associated with integrated coastal zone and ocean management. The program of study focuses on the bio-ecological, socio-economic, cultural and technological elements of coastal zone development and management.

Graduates gain an integrated view of the issues and alternative solutions to the conflicts which may arise from multiple uses of coastal zones. They will be familiar with methods and tools for working with various constituents in the use and management of coastal zone and ocean areas. The focus is to support and facilitate the sustainable development of these regions and the resolution of complex issues with decision makers, planning agencies, community agencies and other constituents.

PROGRAM ENTRY:

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE:

The program has been structured in a four term format that will be delivered in 3 thirteen (13) week terms, and 1 six (6) week technical session.

Term One (13 weeks):

The first term is descriptive in nature, providing first a general overview of the elements and disciplines required for the management of the oceans and the coastal zones. Its aim is to standardize the background of the participants from different disciplines entering the program.

The information provided will serve as the basis for further analysis and integration in the following terms.

The first term includes a description of the ecological, human, and socioeconomic factors in coastal ecosystems and the methods and technologies utilized to implement management.

Term Two (13 weeks):

This term is analytical in nature, providing a review and critical analysis of multiple user conflicts and interdisciplinary subjects that interact in the oceans and the coastal zone. Increased emphasis is placed on legal and human aspects of coastal zone management and methods and technologies.

Technical Session (6 weeks)

This session is designed to expose students to some of the physical applications available in the field of integrated coastal and ocean management.

Work Term (13 weeks):

The students will be placed in pertinent industries or agencies for practical work experience.

EVALUATION:

Students in Advanced Diplomas must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

PROGRAM HIGHLIGHTS

The advanced diploma in integrated coastal and ocean management is designed to equip graduates with in-depth knowledge and the practical skill necessary to be effectively involved in coastal zone management. Seminar-based teaching methods are used wherever appropriate. The program is designed to have an international focus and address topics of relevance to both developed and developing nations. For this reason the program was developed in close consultation with international experts in coastal zone management. It is anticipated that a significant proportion of graduates will follow international employment opportunities.

ADVANCED DIPLOMA - INTEGRATED COASTAL AND OCEAN MANAGEMENT

PROGRAM OUTLINE

Term 1

BSMG 4109 (Coastal Economics)
GEOG 4100 (Remote Sensing)
MENV 4105 (Coastal Resources)
MENV 4106 (Human Ecology)
MENV 4107 (Introduction to Integrated Coastal and Ocean Management)
ONGR 4104 (Coastal Oceanography and Climatology)
WKTM 1002 (Work Term Preparation Seminar)

Term 2

BSMG 4106 (Legal Aspects of Coastal Zone Management)
BSMG 4107 (Conflict Resolution Skills)
GEOG 4200 (Geographic Information Systems)
MENV 4200 (Environmental Management)
MENV 4202 (Coastal Resources Management)
MENV 4203 (Marine Ecotourism)
MENV 4302 (Fisheries Management and Development)

Technical Session

GEOG 4302 (GIS and Remote Sensing for Integrated Coastal and Ocean Management)
MENV 4303 (Current Topics in Ocean Research Technology)
ONGR 4300 (Coastal Geomorphology)

Work Term

WKTM 4109 (Work Term - Advanced Diploma in Integrated Coastal and Ocean Management)

Credit Earned: Advanced Diploma in Integrated Coastal and Ocean Management

Contact: Admissions Officer
(709) 778-0380
1-800-563-5799 (ext. 380)
email: admissions@mi.mun.ca

CAREERS

Three quarters of the World's population live in coastal regions. As land resources become scarcer, the next century will see growth in coastal population and increased pressure on marine resources. This trend has created the need for an integrated rather than sectorial management strategy.

This program is designed for people interested in careers related to planning or management of coastal and ocean activities and or coastal zone development programs. This would include persons working for organizations active in the following areas:

- Environmental, natural resource and fisheries management.
- Non-governmental environmental and community development organizations.
- Educational institutions with coastal related research and public service programs.
- Foreign assistance agencies with natural resource and public service programs.
- Development Banks with environmental and natural resources units.
- Government agencies involved with coastal resources management.
- International consulting in the area of multi-stakeholder conflict resolution.
- Marine recreation and nature tourism.

PROGRAM ENTRY

Please refer to the Admissions Section of this Calendar.

PROGRAM STRUCTURE

The program is comprised of two thirteen (13) week academic terms, a six (6) week technical session and a thirteen (13) week work term. The academic semester and technical session consist of a balance of theory and practical applications through lectures, discussion seminars, case studies, laboratory, field trips and an independent research project. The work term will involve students placed in pertinent industries or agencies for practical work experience.

EVALUATION:

Students in Advanced Diplomas must obtain a passing grade of 65% or better in all program courses.

Students who have received a grade of less than 50% in any course will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in more than one program course during a single term will be required to withdraw from the program.

Students who have received a grade less than 65% (but 50% or greater) in one program course will be permitted to remain in the program, provided that course is retaken when offered and passed with a grade of 65% or better. Only one such repeat will be permitted per term. Failure to obtain a grade of 65% in the repeated course shall lead to termination of a student's program.

CAREERS

While the program is designed to focus the students' academic and technical competencies specific to the water quality field, their undergraduate degree discipline often directs and influences their career choice. Graduates find employment in water and wastewater utilities, environmental companies, engineering and laboratory companies, oil/gas/mining sectors, regulatory agencies and NGOs. In addition, graduates have been successful in securing careers in the beverage, food and manufacturing industries that utilize water.

PROGRAM HIGHLIGHTS

The Marine Institute's Advanced Diploma in Water Quality is the only post-graduate program of its kind in Atlantic Canada that focuses on the study of water and wastewater. Many areas throughout the world are facing a crisis over the supply and quality of water, water for drinking, agriculture, aquatic ecosystems, industrial and manufacturing purposes.

Students are provided with significant training in the technical aspects of water and wastewater treatment, Students also complete specific courses in microbiology, chemistry, limnology, water and environmental policy, statistics and geographic information systems (GIS) and remote sensing that enhance their understanding of the science behind water and wastewater treatment and management. Another unique aspect of the program is it provides students with an introduction to the socio-economic, environmental, and legislative policies, regulations and the importance of protecting and managing water resources.

PROGRAM OUTLINE

Term 1

BIOL 4105 (Water and Wastewater Microbiological Analysis)
CHEM 4100 (Water Chemistry)
FDTE 4110 (Introduction to Water and Wastewater Treatment)
GEOG 4100 (Remote Sensing)
GEOG 4103 (Aquatic Systems)
STAT 4103 (Statistics - Water Quality)
TKPR 415A (Technical Project)
WKTM 1002 (Work Term Preparation Seminar)

Term 2

BIOL 4200 (Water and Wastewater Microbiology)
BSMG 4110 (Environmental Policy - Water Quality)
CHEM 4200 (Chemical and Analytical Methods)
FDTE 4203 (Water and Wastewater Processing I)
GEOG 4200 (Geographic Information Systems)
TKPR 415B (Technical Project)

Technical Session

FDTE 3102 (Food Safety Enhancement Program/Hazard Analysis Critical Control Point)
FDTE 4204 (Water and Wastewater Processing II)
GEOG 4301 (Applied GIS and Remote Sensing for Water Quality)
TKPR 415C (Technical Project)

Term 3 (Work Term)

WKTM 4110 (Work Term - Advanced Diploma in Water Quality)

NOTE: TKPR 415A/B/C must be completed sequentially in the same academic year

Credit Earned: Advanced Diploma - Water Quality

Normal Start: Fall

School of Fisheries

Contact:

Admissions Officer

(709) 778-0380

1-800-563-5799 (ext. 380)

email: admissions@mi.mun.ca

DIPLOMA OF TECHNOLOGY - MARINE ENGINEERING TECHNOLOGY

MISSION

This program is designed to provide a strong technical education in engineering technology, by developing analytical and synthesis skills, complemented by practical training.

PROGRAM OVERVIEW

Main Areas of Study:

- Marine Engineering Knowledge
- Electrotechnology
- Naval Architecture
- Thermodynamics
- Strength of Materials
- Welding and Machining

Accreditation Status:

Transport Canada

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar

PROGRAM STRUCTURE

Length of the Program:

- 4 Years

Number of Semesters:

- 7 Academic Terms

Number of Courses:

- 62 courses, including all required safety courses

Work Terms:

- 3 Work terms (total of 180 days minimum)

EVALUATION:

The minimum passing grade for all courses in the Marine Engineering Technology program is 60%. A cumulative average of 60% must also be maintained throughout the course of the program.

Credit Earned: Diploma of Technology

4 years: 7 academic terms, 2 Technical Sessions and 3 Work Terms

Normal Start: Fall

School of Maritime Studies

Contact: Admissions Officer

(709) 778 - 0380

1-800-563-5799 (ext. 380)

email: admissions@mi.mun.ca

PROGRAM HIGHLIGHTS

This program is designed to graduate students with a variety of strengths that can be used in a large array of employment areas.

- Discipline-related and application courses are supplemented by further courses in Mathematics, to support the technical content; by Marine Law and courses in Business Management.
- The program recognizes the increasing role and use of computers in the technologies. Computer application and familiarity with common engineering software is stressed wherever possible. Students have CAD courses designed to give extensive exposure to packages such as advanced AutoCAD, which is required in the job market. These packages keep students current with industry standards and improve employment prospects.
- The program is recognized and accredited by Transport Canada for remission of sea time and non-safety credited examinations at levels from Fourth Class to Second Class certificates of competency. The graduates from the Marine Engineering program may choose from shore-based marine employment or ship-based employment as engineering officers.
- Upon graduation the student can be credited with 30-months sea service. To qualify to write the initial certificate of competency (4th Class) the graduate must submit to Transport Canada a Sea Training Manual (Vol. 1, 2 and 3) together with proof of graduation and six months active sea service.
- The graduates are exempted from the following challenge examinations in Third and Second Class certificates: Naval Architecture, Electrotechnology, Thermodynamics and Applied Mechanics
- In addition to the certification opportunities described, graduates of the Marine Institute Diploma of Technology in Marine Engineering are eligible for admission to the Memorial University Bachelor of Maritime Studies and Bachelor of Technology programs. Upon completion of the diploma, candidates are required to complete 13 additional courses for the Bachelor of Maritime Studies degree..

PHYSICAL REQUIREMENTS

Applicants seeking entry to the Marine Engineering Technology program, which leads to Transport Canada Certification, should note that Transport Canada requires proof of satisfactory physical fitness prior to sitting for any Transport Canada exams. This includes satisfactory visual acuity, colour vision, and hearing among other physical requirements.

Proof of physical fitness is also required for students to participate in Marine Emergency Duties (MED) Training which is a compulsory part of these programs.

Proof of physical fitness must be provided by way of a signed medical from an approved physician. **Transport Canada Seafarers medical is required for admission to each respective program.** The list of physicians approved to conduct either the Seafarer's or MED medical is available from the Marine Institute Office of the Registrar. Details of the physical requirements for the Seafarer's Medical may be obtained from Transport Canada at the following address:

**Marine Safety Directorate
John Cabot Building
10 Barter's Hill, P.O. Box 1300
St. John's, NL A1C 6H8
(709) 772 - 5167
or online at: www.tc.gc.ca.**

CAREERS

The goal of the Marine Engineering Technology program is to prepare students for careers in engineering without limiting their options. Besides the traditional marine engineering positions, students find employment with government agencies, consulting engineering companies, and industrial production companies. Some students find employment with refineries and offshore-related industries.

The program provides graduates not only for the local market, but also for the national and international market. With the variety of courses offered in the program, graduating students have exposure to most of the common areas of engineering.

Most graduating technologists from this program will work initially under the supervision of a licensed marine engineer, but will, as their careers advance, work independently. Many graduates have advanced to senior supervisory positions, and some are partners in engineering enterprises.

Sample Job Description - Shore Based

- Responsible for the commission and inspection of new equipment and preparation of commissioning and inspection reports.
- Marine surveyors for Transport Canada and other inspection, insurance and class agencies.
- Work as engine fitters, supervisors and managers in shipyards.
- Positions and duties relating to power engineering can also be filled by marine engineering graduates. The certification system controlled by the provincial Department of Labour can also be attempted with sufficient boiler room operational experience.
- Involved in the design and layout of a vessel's machinery space and responsible for the installation of the equipment in new ship construction.
- Supervise the fitting out and refit of drydocked vessels.
- Represents a company's interests in the construction, fitting out and acceptance of new vessels.

Sample Job Description - Ship Based

- Fulfill technical to administrative duties from junior rank to that of the chief engineers position on ships of all power ratings (Steam/Motor).
- Responsible in developing annual vessel refit lists and supervising its completion.
- Responsible for facility, personnel and energy management.
- Identifies operational and design problem areas and implements solutions.
- A chief engineer represents shore-based management.

PROGRAM OUTLINE

Term 1

CMSK 1105 (Technical Communications I)
ELTK 1102 (Electrotechnology)
ENGR 1105 (Engineering Graphics)
One of: MATH 1100 (Pre-Calculus)
MREK 1101 (Marine Engineering Knowledge I)
PHYS 1103 (Physics)
SFTY 1104 (WHMIS)
WKPR 1110 (Fitting Shop 1)

Term 2

CMSK 1205 (Technical Communications II)
ELTK 1202 (Electrotechnology)
ENGR 1102 (Engineering Drawing)
FLDS 2105 (Fluid Mechanics)
MATH 1105 (Introductin to Calculus)
MREK 1201 (Marine Engineering Knowledge II)
WKPR 1200 (Fitting Shop)

Technical Session I

ENGR 1104 (Engineering Graphics)
MTPR XXXX (Materials & Processes)
SFTY 1106 (Marine Advanced First Aid)
SFTY 1114 (BASIC SAFETY - STCW'95 VI/I)
WKPR 1109 (Welding Shop I)

Term 3

ELTK 2119 (Marine Electrical Systems)
FLDS 3105 (Hydraulics & Pneumatics)
MATH 12XX (Calculus)
MECH 2111 (Statics and Dynamics)
MREK 2111 (Marine Engineering Knowledge III)
TRMO 2105 (Thermodynamics)
WKPR 1117 (Machine Shop I)

Term 4

BSMG 3113 (Personal Resource Management)
MECH XXX2 (Mechanics)
MREK XXX4 (Marine Engineering Knoweldge IV)
MTPR 2108 (Strength of Materials)
NARC XXX1 (Naval Architecture)
TRMO 2204 (Thermodynamics)
WKPR 2113 (Fitting Shop)
WKPR 2117 (Machine Shop II)

Technical Session 2

ELTK XXX4 (Electro-Maintenance)
NARC XXX2 (Naval Architecture)
SFTY 1123 (Oil and Chemical Tanker Familiarization)
SFTY 1124 (Confined Space Entry Awareness) - **To be delivered after SFTY 1123**
SFTY 1129 (Security Awareness for Seafarers with DSD)
WKPR 2217 (Machine Shop III)
WKPR 3206 (Welding Shop III)

Work Term 1

WKTM 1103 (Work Term I - Marine Engineering Technology)

Term 5

BSMG 3XXX (Marine, Law & Environmental Stewardship)
ELTK 3203 (Rotating AC Machines)
ELTR XXXX (Electronic Devices)
MREK XXX5 (Marine Engineering Knowledge V)
MTPR 3104 (Strength of Materials)
NARC XXX3 (Naval Architecture)
TRMO 3107 (Thermodynamics)

Work Term 2

WKTM 2103 (Work Term II- Marine Engineering Technology)

Term 6

CHEM XXXX (Industrial Chemistry)
CNTL 2110 (Instrumentation, Controls & Automation)
ELTK 3202 (DC Machines and Transformers)
MREK XXX6 (Marine Engineering Knowledge VI)
**SFTY 1117 (Survival Craft - STCW'95 VI/2)

Work Term 3

WKTM 3103 (Work Term III - Marine Engineering Technology)

Term 7

BSMG XXXX (Leadership and Teamworld)
CNTL 2205 (Instrumentation, Controls & Automation)
ELTK XXX7 (Shipboard Voltage Distribution Systems)
NARC 3200 (Naval Architecture)
SFTY 1118 (Advanced Firefighting - STCW'95 VI/3 & Officer Certification)

****Taught after completion of other courses in the Term**

PROGRAM ENTRY:

Please refer to the Admissions section of this Calendar.

PROGRAM STRUCTURE:

The program is structured in a three year format to be delivered in six academic semesters, two practical skills training sessions, one work term and one professional orientation session.

The first two terms include courses that are common to other Marine Institute technology programs, such as communication skills, mathematics, physics, and engineering graphics, as well as courses in chemistry, biology, computer applications, and an introduction to issues in the Marine Environment. After Term 2 students will participate in the first practical skills session, which is seven weeks in duration. The first practical session includes safety courses such as MED-A1 and marine sampling.

In the second year students focus on environmental issues relating to scientific and social problems of marine pollution and marine resource use. This year serves to give a solid background in environmental science and technology and the use of environmental legislation and policy as a control measure for human interaction with the environment. The second practical skills training session after Term 4 is five weeks in duration and is followed by an 8 week work term placement with

industry or environmental agencies. Following Term 4 students are academically and practically prepared for their work term placement and have completed the certification requirements for Standard First Aid, TDG, WHMIS, MED-A1, , SVOP (Small Vessels Operators Proficiency), Basic Oil Spill Responder, Confined Space Awareness and H2S Alive. Additionally, the students have a strong background in communications, computer skills and laboratory skills. The work term placement will provide an opportunity for students to apply the skills and knowledge obtained from the first two years of the program.

The final year continues to build on the environmental concepts especially those related to environmental management. During this year students will undertake a major technical research project with the support of a team of supervisors from faculty and support staff. Following the sixth semester a four week professional orientation places the student with industry to gain further professional experience prior to the June graduation.

PROGRAM HIGHLIGHTS

The program is designed to equip graduates with the ability to work in the relatively new and expanding area of Marine Environmental Technology. The environmental sector in general is growing at a fast rate and in light of recent problems in the fisheries and the crowding of our coastal areas, there is a need for resource management technologists who can apply technical expertise in the ocean and coastal environments. Some of the highlights of the program are given below.

- Upon graduation, students will be familiar with the underlying scientific principles of environmental operations as well as the policy and legal framework that forms current environmental regulations. They will be exposed to the multidisciplinary aspect of the environmental sector.
- To meet the needs of industry, discipline-related courses are supplemented by further training in the areas of computer applications, communications, business principles and economics.
- The program recognizes the increasing role of computers in the environmental sector. Computer basics are taught early in the program allowing advanced courses to take advantage of computer related topics such as remote sensing and geographic information systems.
- In order to give participants in the program experience in the industry, a mandatory work term is included in the program. This eight week session allows the student to gain experience in an industry setting.
- In addition to the certification opportunities described, graduates of the Marine Institute Diploma of Technology in Marine Environmental are eligible for admission to the Memorial University Bachelor of Technology program. Candidates are required to complete 13 courses for the Bachelor of Technology degree.
- Certified training will be provided in Standard First Aid, TDG, WHMIS, MED-A1, MED-A3, SVOP (Small Vessel Operators Proficiency), Basic Oil Spill Responder, Confined Space Awareness and H2S Alive.
- Students will be familiar with sampling methodologies for scientific study in air, water and biological sampling.
- The professional orientation session prior to graduation provides students additional work experience and industry contacts.

DIPLOMA OF TECHNOLOGY - MARINE ENVIRONMENTAL TECHNOLOGY

Credit Earned: Diploma of Technology
3 years (6 academic terms, 2 practical skills term)

Normal Start: Fall
School of Fisheries

Contact: Admissions Officer
(709) 778-0380
1-800-563-5799 (ext. 380)
email: admissions@mi.mun.ca

CAREERS

The goal of the Marine Environmental Technology Program is to develop environmental technologists who possess the knowledge and skills to work in the marine area. However, graduates are not limited to working in marine sectors as the program includes broad environmental principles applicable to diverse sectors. Skill development in sampling methodologies apply to freshwater and terrestrial species. Program graduates have been successful in applying their skills and knowledge to environmental sectors that are both marine and land based.

Through extensive consultation with industry, skills that employers find useful have been identified and are focused on through the program. Since many of the companies operating in the environmental sector are relatively small and consultancy based, communication and business skills are integrated into the program. The result is a graduate who can fill a number of different roles in the environmental sector.

Sample job descriptions include:

- Field technologist who collects samples in a potentially polluted area. With experience, the technologist will be able to manage a field operation.
- Environmental advisor on the use, conservation and protection of coastal areas.
- Apply local laws, rules and regulations in the development of safe environmental plans, assessments, etc.
- Perform laboratory analysis on chemical and biological samples.
- Respond to chemical spills and assist with cleanup operations. With experience, students should be able to oversee cleanup operations.

Possible Job Titles are:

- Fishery Observer
- Environmental Technologist
- Environmental Officer
- Fishery Officer
- Pollution Abatement Officer
- Laboratory Technologist
- Operator of Environmental Facility
- Assessment Officer
- Technical Salesperson
- Pollution Control Officer

PROGRAM OUTLINE

Term 1

BIOL 1100 (Biology)
CHEM 1101 (General Chemistry I)
CMSK 1102 (Technical Communications)
ENGR 1103 (Engineering Graphics)
PHYS 1100 (Physics)
One of: MATH 1100 (Pre-Calculus)
or
MATH 1101 (Introduction to Calculus)

Term 2

CHEM 1201 (General Chemistry II)
CMSK 1201 (Communication at Work)
CPSK 1103 (Computer Database and Spreadsheet Applications)
MENV 2100 (Marine Environment)
PHYS 1200 (Physics)
One of: MATH 1101 (Introduction to Calculus)
or
MATH 1200 (Calculus)

Technical Session (Practical Skills)

MENV 1100 (Sampling I)
MENV 1101 (Industry Visitation)
MENV 2103 (Basic Oil Spill Responder)
SFTY 1101 (Standard First Aid)
SFTY 1130 (Intro. to Transportation of Dangerous Goods (TDG))
SFTY 1104 (Workplace Hazardous Materials Information System)
SFTY 1108 (MED A1)
SFTY 1121 (Equipment and Site Safety)
SFTY 1124 (Confined Space Entry Awareness)
SFTY 1125 (Small Vessel Operator Proficiency)
SFTY 2100 (Small Craft Safety & Boat Handling)

Term 3

BIOL 2105 (Microbiology)
CHEM 2103 (Organic Chemistry)
CMSK 2101 (Technical Communications)
MATH 1200 (Calculus)
ONGR 2103 (Oceanography)
SFTY 2101 (H2S Alive)
STAT 2108 (Applied Statistics)
WKTM 1002 (Work Term Preparation Seminar)

Term 4

BSMG 2104 (Policy and Law)
CHEM 2202 (Environmental Chemistry I)
CMSK 2201 (Technical Communications)
GEOG 2100 (Geography)
MENV 2101 (Dynamics of Marine Pollution)
MENV 2300 (Environmental Applications of Industrial Hygiene)
SFTY 2201 (Boating - Practical Skills)

Technical Session 2 (Practical Skills)

BIOL 2300 (Fish Identification and Remediation)
MENV 2102 (Marine Sampling)
MENV 2302 (Environmental Microbiology Field Studies)
SFTY 2300 (Small Boat Navigation for Marine Sampling)

Work Term

WKTM 2106 (Work Term)

Term 5

BIOL 3100 (Marine Biology)
BSMG 3121 (Environmental Economics & Project Management)
CHEM 2300 (Environmental Chemistry II)
GEOG 3101 (Mapping and GIS)
MENV 2301 (Fisheries Conservation Technologies)
TKPR 312A (Technological Thesis)

Term 6

BIOL 2100 (Aquatic Ecology)
BSMG 3111 (Environmental Assessment and Auditing)
BSMG 3119 (Management Principles)
GEOG 3200 (Remote Sensing)
MENV 3102 (Fundamentals of Coastal Zone Management)
TKPR 312B (Technological Thesis)

Work Term

WKTM 3300 (Professional Orientation)

DIPLOMA OF TECHNOLOGY - MARINE ENGINEERING SYSTEMS DESIGN

MISSION

The Marine Engineering Systems Design program, nationally recognized by the Canadian Council of Technicians and Technologists/Canadian Technology Accreditation Board, is designed to:

- to provide a strong technical education in ship piping, machinery & propulsion systems design supported by a good knowledge of marine engineering and naval architecture
- to provide a good technical education in general mechanical engineering technology
- to prepare students for employment in marine, offshore and land based environments
- to develop analytical and synthesis skills complemented by practical training.

PROGRAM OVERVIEW

Information on the Discipline:

Marine Engineering Systems Design is a relatively unique program developed in the early 80's to bridge the gap between Naval Architecture and Marine Engineering. Students receive instruction in aspects of both disciplines and will work closely with Marine Engineers and Naval Architects throughout their careers.

Main Areas of Study:

The main areas of study in the program are ship auxiliary systems, ship power/propulsion systems, electrotechnology, fluid mechanics and thermodynamics

Characteristics of Graduates:

Successful graduates of the Marine Engineering Systems Design program have a strong work ethic and a respectable understanding of marine engineering systems.

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar.

PROGRAM STRUCTURE

Length of the Program:

Students will require three years to complete the diploma.

Number of Semesters:

The program consists of six (6) 13 week academic terms and three (3) 5 week technical terms.

Number of Courses:

The program is comprised of a total of 49 courses.

Work Terms:

There are no work terms in the program however many students obtain summer employment within the field. A number of local and national companies regularly hire students for summer positions after their second year.

Topics Covered in each Semester:

In the early semesters, each semester is comprised of both academic and technical courses. As students progress through the program technical courses become the main focus.

PROGRAM HIGHLIGHTS

This program is designed to graduate students with a variety of strengths that can be used in a large array of employment areas.

- Discipline-related and application/design courses are supplemented by further courses in Mathematics, to support the technical content and courses in Engineering Design and Economics.
- Computer application and familiarity with common engineering software is stressed wherever possible. Students complete courses designed to give extensive exposure to industry relevant software such as AutoCAD, MS Excel, MS Word, MS Powerpoint and more. These and other software packages ensure students become current with industry standards and improve employment prospects.
- Marine Engineering Systems Design requires considerable use of multiple computer applications and as such, the program has been designated a laptop program. Students receive a state of the art IBM laptop computer preloaded with all required software at the start of their second year and use it throughout the rest of their studies. After successful completion of the program, graduates may elect to purchase the laptop for a modest fee.
- Courses in Engineering Economics and Engineering Management are included in the Marine Engineering Systems Design Technology Program to introduce students to the requirements for running or managing a business. The courses provide background in the financial aspects and methods of project planning and management decision making.
- In addition to the certification opportunities described, graduates of the Marine Institute Diploma of Technology in Marine Engineering Systems Design are eligible for admission to the Memorial University Bachelor of Maritime Studies and Bachelor of Technology Programs. Upon completion of the diploma, candidates are required to complete 13 additional courses for the Bachelor of Maritime Studies degree or Bachelor of Technology degree.

PROGRAM OUTLINE

Term 1

CHEM 1100 (Chemistry)
CMSK 1102 (Technical Communications I)
ENGR 1103 (Engineering Graphics)
ENSY 1101 (Prime Movers & Auxiliary Power Plants)
ENSY 1202 (Introduction to Marine Engineering Systems Design)
One of: MATH 1100 (Pre-Calculus)
or
MATH 1101 (Introduction to Calculus)
PHYS 1100 (Physics)
SFTY 1104 (WHMIS)

Term 2

ENGR 1201 (Introduction to AutoCAD)
FLDS 2100 (Fluid Mechanics)
One of: MATH 1100 (Pre-Calculus)
or
MATH 1101 (Introduction to Calculus)
or
MATH 1200 (Calculus)
MECH 2102 (Mechanics)
MTPR 2104 (Materials and Processes)
NARC 1102 (Ship Structural Geometry)
PHYS 1200 (Physics)

Technical Session I

CMSK 1201 (Communication at Work)
ENSY 2000 (Ship Engineering Design Process)
WKPR 2119 (Workshop Practice)

Term 3

ELTK 1100 (Electrotechnology)
ENSY 2103 (Power and Resistance Technology)
ENSY 2200 (Auxilliary Systems)
MATH 1200 (Calculus)
MTPR 2100 (Strength of Materials)
TRMO 2100 (Thermodynamics)

Term 4

ELTK 1200 (Electrotechnology)
ENSY 2102 (Propulsion Technology)
ENSY 2201 (Auxilliary Systems)
MATH 2101 (Advanced Calculus)
MTPR 3100 (Strength of Materials)
TRMO 2200 (Thermodynamics)

Technical Session 2

ENSY 2202 (Ship's Space Ventilation)
ENSY 3000 (Cold Environment Design)
TRMO 3101 (Applied Thermodynamics - Refrigeration & Air Conditioning)

Term 5

ELTK 2102 (Marine Electrical Systems)
ENSY 3102 (Propulsion Arrangement Design)
ENSY 3300 (Ship Engineering Project)
ENSY 3103 (Ship Stability for MESD)
FLDS 2201 (Marine Hydraulics)
TRMO 3103 (Thermodynamics)

Term 6

BSMG 3101 (Engineering Economics)
CNTL 2302 (Instrumentation, Controls & Automation)
ENSY 3104 (Applied Marine Engineering Design)
ENSY 3301 (Ship Engineering Project)
ENSY 3302 (Marine Electrical Project)
ENSY 3303 (Auxiliary Machinery Arrangement)
ENSY 3304 (Piping Arrangement Design)

Technical Session 3

BSMG 3105 (Shipyard Management)
ENSY XXXX (Project Presentation)
NARC 3209 (Offshore Structures)

PHYSICAL REQUIREMENTS

NOT Applicable

CAREERS

The goal of the Marine Engineering Systems Design Technology Program is to prepare students for careers particularly in ship building/ship repairing and offshore industries, but also in general mechanical engineering without limiting their options. In addition to shipyard positions, students find employment with government agencies, consulting engineering companies, offshore and ocean engineering companies, engineering sale and servicing companies, utility and industrial production companies. Some students find employment with the Canadian Navy, refineries and pipelines industry.

This program permits many versatile and diverse job opportunities. Most graduating technologists from this Program will work initially under the supervision of a professional engineer or technologists, but will, as their careers advance, work independently. Many graduates have advanced to senior positions, and some are partners in engineering enterprises.

Evaluation:

- Evaluation (where applicable)

Graduation Requirements

- Cumulative average of 60%

Sample Job Description

- See Sample Job Description below

Location

- The Program provides graduates not only for the local market, but also for the national and international market. With the variety of courses offered in the Program, graduating students have exposure to most of the common areas of mechanical and marine engineering.

Sample Job Descriptions:

Ship Systems Designer

- Working under supervision of an engineer, assists in the design and implementation of piping and pumping systems, spaces ventilation, power plant systems, propulsion systems, domestic systems and cargo handling systems.
- Preparing complicated drawings and graphic images, using traditional and computerized (CAD) methods.
- Prepares inspection reports and the field data.

Repair Estimator

- Working under supervision of an engineer, assists in field data requisition, work scope estimation and analysis.
- Prepares needed drawings and sketches by hand or in CAD.
- Prepares material requisitions and work schedules.

Quality Assurance Technologists

- Working under supervision of an engineer, assists in the development of a quality assurance manual for pipe spools fabrication and testing.
- Maintains quality control process on the manufacture of pipe spools.
- Identifies production problems and implements solutions.
- Prepares inspection reports and develops required inspection forms.

Ship Propulsion Designer

- Will work under supervision of an engineer and may have supervision over detailing draft persons.
- Prepares shafting assembly drawings using CAD or by hand and performs classification calculations.
- Maintains technical liaison with clients, classification societies and contractors.
- Assists in investigations and prepares reports.

The Diploma of Technology in Nautical Science is a globally recognized, co-operative program which is accredited by Transport Canada in accordance with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended in 2010 (Manila Convention). This cadet program is designed to:

- provide a strong theoretical and practical education in the field of nautical science;
- prepare students for employment in marine transportation;
- produce graduates who are capable of accepting the responsibilities and performing the duties assigned to them as ship's officers.
- prepare students for professional recognition as seafaring officers by Transport Canada and to sit for the remaining Transport Canada examinations for the Watchkeeping Mate Certificate of Competence.

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar.

PHYSICAL REQUIREMENTS

Applicants seeking entry to Marine Institute programs which lead to Transport Canada Certification for Seafarer's should note that Transport Canada requires proof of satisfactory physical fitness prior to sitting for any Transport Canada exams. This includes satisfactory visual acuity, colour vision, and hearing among other physical requirements.

These programs include the Marine Institute Diplomas of Technology in Nautical Science, Marine Engineering, the Vocational Certificate in Marine Diesel Mechanics and the Technical Certificate in Bridge Watch Program. Proof of physical fitness is also required for students to participate in Marine Emergency Duties (MED) Training which is a compulsory part of these programs.

Proof of physical fitness must be provided by way of a signed medical from an approved physician. **Signed Seafarer's medicals from an approved physician are required for admission to each respective program.** The list of physicians approved to conduct the Seafarer's medical is available from the Marine Institute Office of the Registrar. Details of the physical requirements for the Seafarer's Medical may be obtained from Transport Canada at the following address:

Marine Safety Directorate
John Cabot Building, 10 Barter's Hill
P.O. Box 1300, St. John's, NL A1C 6H8
(709) 772 - 5167

PROGRAM STRUCTURE

As a co-operative program, the Nautical Science diploma consists of periods of study at the Marine Institute which alternate with periods at sea. The entire program consists of:

- First Year consists of semester one and two followed by an eight-week technical session and;
- a two-month sea phase following the first technical session;
- a second or intermediate year of study consisting of semesters three and four, followed by an eight-week technical session;
- a fifteen-month sea phase following the second technical session. This sea phase may be completed over two work term periods; and,
- a third or advanced year of study consisting of semesters five and six followed by a final eight-week technical session.

The total time to complete the program is normally four years. As indicated, the first year of study, commencing in September, consists of two terms (fall and winter). Here the focus is on math, the sciences, and communications. Students are introduced to ships and shipping in their first and second term which is followed by an eight-week Technical Session. The Technical Session is completed in the spring following Term 2. The focus in technical session is on hands on courses and on short courses in Marine Emergency Duties.

The first Technical Session therefore serves the twin purposes of further introducing the cadet to the technical content of the program while carrying out practical exercises at sea and taking a series of short courses in Marine Emergency Duties (MED). The MED training prepares the students for the realities of emergencies at sea and the part that they might play in them. This, in combination with the practical exercises at sea, provides for safer sea phases for the cadets.

The second year focuses entirely on such technical subjects as navigation systems, stability, and seamanship. The second technical session serves the same purpose and is made up of technical courses which not only contribute to the overall technical competence of the cadets but provides them with other skills which employers consider essential. The student who has successfully completed all of the primary and intermediate parts of the program may be eligible to sit for the Transport Canada's Bridge Watch Rating examination.

The final year of study covers advanced materials in courses introduced previously. Other subjects involving the business and management of shipping are also introduced here. The final Technical Session again involves technical materials including the practice of bridge resource management which, in part, is carried out on the Institute's full mission bridge simulator.

Sea Phases

During the program, the cadet must accumulate a minimum of 12 months of recognized sea time in sea placements which have been approved by the Institute through the Placement Office. This is acquired through compulsory sea phase periods which are governed by the Marine Institute General Work Term Guidelines and the Nautical Science Work Term Regulations. These sea phases are, in fact, guided work terms for which accredited logbooks must be kept and the employers carry out personal evaluations of the cadets.

The first sea phase (WKTM 1102) is scheduled over a two-month period between the end of the first technical session and the beginning of the following semester.

Following the second Technical Session, the student commences the second sea phase (WKTM 2102). This is an extended period of 15 months wherein the student must accumulate the remainder of the required 12 months sea time.

Credit Earned:	Diploma of Technology
4 years:	(6 Academic Terms, 3 Technical Sessions and 2 Sea Phase Work Terms)
Normal Start:	Fall School of Maritime Studies
Contact:	Admissions Officer (709) 778-0380 1-800-563-5799 (ext. 380)

PROGRAM HIGHLIGHTS

This program prepares graduates for a successful sea-going career as a ships' officer. Transport Canada recognizes the professional competence of Marine Institute graduates through the provision of exemptions for specific certification examinations. Graduates also have the option of pursuing further education.

Transport Canada Certification

- Subject to the Marine Institute general academic regulations governing graduation, graduates of the Diploma of Technology in Nautical Science having a cumulative average of 70% and an attendance rate of at least 90% in the program are eligible for exemptions from Transport Canada for specific examinations.
- Transport Canada recognizes the benefits of education and training in marine transportation. The reality is that these benefits translate into a remission of sea service from Transport Canada for the time spent in school at the Marine Institute. In this case it is a full 24 months. Normally, seafarers applying to Transport Canada to sit for Watchkeeping Mate Certificate examinations would be required to have accumulated 36 months sea time. However, Marine Institute graduates are required to accumulate only 12 months for the same certificate.
- Consequently, eligible diploma graduates may apply to sit for their Transport Canada examinations in Navigation Safety and General Seamanship. If successful in passing these examinations, the cadets will receive their Watchkeeping Mate Certificate of Competence from Transport Canada. Transport Canada grants exam exemptions at various other certificate levels.
- Several other combinations of qualifications for Transport Canada certification for the Canadian coastal trade and offshore waters are possible through the diploma program. Students who are interested should contact the Marine Institute School of Maritime Studies or Transport Canada for further details.
- In addition to the certification opportunities described, graduates of the Marine Institute Diploma of Technology in Nautical Science are eligible for admission to the Memorial University Bachelor of Maritime Studies program. Upon completion of the diploma, candidates are required to complete 13 additional courses for the Bachelor of Maritime Studies degree.

PROGRAM OUTLINE

Term 1

CHEM 1100 (Chemistry)
CMSK 1105 (Technical Communications I)
ENGR 1105 (Engineering Graphics)
MATH 1112 (NASC Mathematics I)
NASC 1104 (Seamanship I)
PHYS 1104 (Physics)
SFTY 1104 (WHMIS)

Term 2

CMSK 1205 (Technical Communications II)
ELTK 1203 (Basic Electrical Technology)
MATH 1212 (NASC Mathematics II)
NASC 1204 (Seamanship II)
ONGR 1201 (Meteorology I)
PHYS 1204 (Physics)

Technical Session 1

NASC 1303 (Shipboard Skills)
NASC 2107 (Restricted Operator's Certificate - Maritime Commercial)
SFTY 1106 (Marine Advanced First Aid)
SFTY 1114 (Basic Safety - STCW'95 VI/1)
SFTY 1117 (Survival Craft - STCW" 95 VI/2)
SFTY 1124 (Confined Space Entry Awareness)
SFTY 1129 (Security Awareness Training for Seafarers with Designated Security Duties)

Work Term

WKTM 1102 (Sea Phase I - Nautical Science)

Term 3

MREK 2102 (Marine Engineering Knowledge)
NARC 2102 (Ship Building)
NASC 2101 (Stability)
¹NASC 2102 (Navigation Systems - SEN 1A1)
NASC 2108 (Navigation)
NASC 2112 (Introduction to Cargo Operations)

Term 4

MREK 2202 (Marine Engineering Knowledge)
NARC 2202 (Ship Building)
NASC 2104 (Principles of Cargo Operations & Navigation)
NASC 2200 (Navigation)
¹NASC 2202 (Navigation Systems - SEN 1A2)
NASC 2209 (Navigation Safety)
NASC 3108 (Stability)

Technical Session 2

NASC 2306 (ECDIS)
NASC 2307 (Communications)
NASC 3201 (GMDSS)
SFTY 1123 (Oil and Chemical Tanker Familiarization STCW'95 A-V/1)

Work Term

WKTM 2102 (Sea Phase II - Nautical Science)

Term 5

BSMG 3122 (Law and Environment)
MREK 3102 (Marine Engineering Knowledge)
NASC 3100 (Navigation)
NASC 3102 (Cargo Operations)
ONGR 3101 (Meteorology II)
TKPR 3108 (Advanced Technical Report Writing)

Term 6

BSMG XXXX (Ship Management)
NASC XXXX (Seamanship)
NASC XXXX (Navigation Safety)
NASC XXXX (NS&I)
NASC 3200 (Navigation)
NASC 3208 (Stability)

Technical Session 3

¹NASC 2300 (Navigation Systems - SEN)
NASC XXXX (TC Oral Exam Preparation)
NASC 3303 (Bridge Watchkeeping)
SFTY 1118 (Advanced Firefighting (STCW" 95 VI/3) & Officer Certification)

¹ - Successful completion required as partial requirement for SEN 1 (Transport Canada) credit

² - In order to get a credit for Seamanship 2100 a pass must be obtained in the Morse Light section of the course.

MISSION

The Naval Architecture program is designed to:

- Provide a strong technical education in naval architecture and shipbuilding technology.
- Prepare students for employment in shipyards and boatyards, consulting firms, research establishments, government agencies and the offshore oil and gas industry.
- Develop practical skills employed in ship and boat design, 2D and 3D draughting surveying and quality assurance

PROGRAM OVERVIEW

The Naval Architecture program is designed to prepare graduates to enter the workforce with a sound background in Naval Architecture technology along with a range of practical skills ready for use on their first day of employment.

Main Areas of Study:

- In the first year, students begin studying ship types and are introduced to the shipping business. Term 2 provides introductory courses in ship structures and marine engineering. The remaining courses in this year consist of foundation courses such as mathematics, physics, chemistry, materials study, and communication skills. Practical applications of commonly used computer software including spreadsheets, 2D draughting and presentation applications are addressed.
- Following Term 2 is a five-week intersession term which sets the foundation for further study in ship design and hull form.
- The second year concentrates on the fundamentals in the three core subject areas which define a Naval Architecture Technologist; ship stability, ship structures and production, and hull strength assessment. Associated with each subject area is practical skills development including the use of stability software and CAD software for traditional 2D ships' drawings as well as 3D design applications.
- Following Term 4 of the second year is a five-week intersession term concentrating on marine systems and the economics of ship operations.
- The third and final year builds on the fundamentals of the three core subject areas as well as ship resistance and propulsion with each student completing an extensive ship design project beginning with a mission analysis and finishing with a complete preliminary ship design package. At the same time the student is introduced to offshore structures and composites for boats.

Characteristics of Graduates:

- Successful graduates of the Naval Architecture Technology program will have a proven work ethic and an excellent understanding of vessel design and construction practices, preparing them well for initial employment as a Naval Architect Technologist.

PROGRAM HIGHLIGHTS

- The Naval Architecture program is designed to prepare graduates to enter the workforce with a sound background in Naval Architecture technology along with a range of practical skills ready for use on their first day of employment.
- Following an introduction to computer aided draughting in the first year, students hone their skills in the use of AutoCAD over the next two years through extensive project work involving ships' general arrangements, structural steel drawings and a variety of system schematics.
- The program recognizes the role being played by three dimensional computer modeling in modern ship design practice and includes training in many of today's widely used three dimensional design tools such as Maxsurf and Rhinoceros.
- Building on the fundamentals of intact and damaged ship stability, students prepare a standard Trim and Stability booklet as required by Transport Canada for most registered ships. Software associated with stability analyses is introduced in the second year with further exposure, through project work, in the final year of study.
- In the second year the fundamentals of ship resistance and propulsion are studied including the determination of an appropriate engine and propeller for a given hull based on achieving maximum efficiency. Students will also have an opportunity to carry out model resistance tests taking advantage of Memorial's clear water tank testing facility. The following year, as part of an introductory course in composite hull construction, students will computer loft a hull and prepare it for cutting on a computer controlled router, assemble the parts into a plug and build a mould that can be used for creating multiple hull parts.
- In the final year of the diploma program each student undertakes a ship design project for a vessel type of his own choosing. The project begins in September with a description of the ship's mission and ends with a public presentation of the design at the end of May. A classic approach to the iterative process of ship design is taken and the final design package includes; computer generated hull lines, general and machinery arrangements, capacity plan and structural drawings all supported by stability analyses, scantling determination from classification society rules, powering calculations and applicable national and international standards.

PROGRAM ENTRY

As per the Marine Institutes minimum entrance requirements for Diploma of Technology programs.

PROGRAM STRUCTURE

Length of the Program:

- Three academic years

Number of Semesters:

- Full time students will complete the program in six (6) 13 week semesters and three (3) 5 week Technical Sessions.

Number of Courses:

- Students must complete 47 courses in 3 years of study

Work Terms:

- There are no formal work terms associated with the program, however students frequently obtain summer employment in the industry between the second and third years of the program.

Topics Covered in each Semester:

- Refer to program calendar – Main Areas of Study

PROGRAM OUTLINE

Term 1

CHEM 1100 (Chemistry)

CMSK 1102 (Technical Communications)

ENGR 1103 (Engineering Graphics)

One of: MATH 1100 (Pre-Calculus)

or

MATH 1101 (Introduction to Calculus)

NARC 1103 (Ships and Shipping)

PHYS 1100 (Physics)

SFTY 1104 (WHMIS)

Term 2

ENGR 1201 (Introduction to AutoCAD)

One of: MATH 1100 (Pre-Calculus)

or

MATH 1101 (Introduction to Calculus)

or

MATH 1200 (Calculus)

MECH 2102 (Mechanics)

MREK 2101 (Marine Engineering Knowledge)

MTPR 2104 (Materials and Processing)

NARC 1104 (Steel Ship Structure)

PHYS 1200 (Physics)

Technical Session I

CMSK 1201 (Communication at Work)

CPSK 1300 (Computer Skills)

NARC 1101 (Ship Hull Geometry)

Term 3

ELTK 1100 (Electrotechnology)

MATH 1200 (Calculus)

MTPR 2100 (Strength of Materials)

NARC 2107 (Ship Building)

NARC 2108 (Outfitting)

NARC 2109 (Hydrostatics)

Term 4

ELTK 1200 (Electrotechnology)

MATH 2101 (Advanced Calculus)

MTPR 3100 (Strength of Materials)

NARC 2103 (Ship Stability)

NARC 2207 (Ship Building)

NARC 2208 (Ship Building)

Technical Session 2

ELTK 2104 (Electrotechnology)

MREK 2201 (Marine Engineering Knowledge)

MTPR 3201 (Strength of Materials)

NARC 2110 (Ship Operations Management)

Term 5

NARC 2201 (Resistance and Propulsion)

NARC 3102 (Ship Design)

NARC 3103 (Ship Structural Design)

NARC 3104 (Preliminary Design Project)

NARC 3108 (Boat Design - Composite Structure)

NARC 3203 (Hull Form Development Project)

Term 6

NARC 3106 (Stability)

NARC 3201 (Marine Electrical Project)

NARC 3202 (Marine Engineering Project)

NARC 3204 (Ship Structural Design Project)

NARC 3206 (Ship Arrangement Project)

NARC 3208 (Boat Design-Fabrication)

Technical Session 3

BSMG 3105 (Shipyard Management)

NARC 3209 (Offshore Structures)

NARC 3300 (Ship Design Project)

EVALUATION:

Not Applicable

PHYSICAL REQUIREMENTS

- (Where Applicable). There are no specific physical requirements required to enroll in the Naval Architecture program.

CAREERS

Naval Architecture graduates will be entering a broad and diverse field in ship and boat design, construction, and repair. The offshore oil and gas industry is also employing many graduates, along with various regulatory bodies such as Transport Canada, the American Bureau of Shipping, and Lloyds Register. While many work in an office environment, some jobs involve ship survey work or overseeing construction in shipyards or offshore. Graduates will be well prepared for a wide variety of these employment opportunities.

Types of Companies Graduate will find Work:

Graduates of the program typically work in shipyards, boatyards, general consulting firms, classification societies/ marine surveyors, marine offshore industries, research establishments and government agencies.

Type of Job Titles:

See Sample Job Description

Location:

Students typically find employment in Canada and the United States, and some graduates have found employment overseas.

Sample Job Description

Typical activities for a Naval Architect Technologist associated with job titles:

Hull Draftsman

- Prepare structural steel drawings for ships at the concept, preliminary and detail design stages.
- Plan new construction and repair work sequences for ship construction and refit
- Prepare work packages for various trades in the shipyard
- Estimate material and man-hour requirements for fabrication work

Chief Draftsman

- Perform design checks on preliminary design packages for bidding documents
- Schedule and manage drawing activities in the preparation design packages
- Determine drawing and man-hour requirements for ship refit or repair activities
- Design steel fabrication details for merchant and naval vessels

Consultant Naval Architect

- Design boats or ships to satisfy a stated purpose including specification, lines plan, general arrangement and structural layout, powering and machinery selection
- Perform stability assessments on ships

MISSION

The Marine Engineering Technician program is specifically designed for Naval Engineering students pursuing a career with the Canadian Navy. Courses are designed to provide a solid foundation for the understanding of engine room machinery and auxiliary equipment, as well as engine room operations.

PROGRAM OVERVIEW

Main areas of study:

- Marine Engineering Knowledge
- Workshop practice and Machining
- Electrotechnology
- Electronics and Instrumentation

Accreditation Status:

The Marine Engineering Technician program is nationally accredited by the Canadian Council of Technicians and Technologists/ Canadian Technology Accreditation Board

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar.

PHYSICAL REQUIREMENTS

Applicants seeking entry into the marine Engineering Technician program must meet Canadian Navy physical fitness criteria.

PROGRAM STRUCTURE

Length of the Program:

- 2 Years

Number of Semesters:

- 4 Academic Terms

Number of Courses:

- 26 courses

Evaluation:

The minimum passing grade for all courses in the Marine Engineering Technician program is 50%. A cumulative average of 60% must also be maintained throughout the course of the program.

Potential students should call their local recruiting centre at 1-800-856-8488 and indicate your interest in Navy programs at the Marine Institute.

Interested candidates will also find more information on line at the following sites:

http://www.recruiting.dnd.ca/engraph/eenrolment/index_e.aspx

http://www.navy.forces.gc.ca/mspa_home/index_e.asp

TECHNICIAN DIPLOMA - MARINE ENGINEERING

PROGRAM OUTLINE

TERM 1

CMSK 1100 (Introduction to Technical Reporting)
ELTK 1100 (Electrotechnology)
ENGR 1101 (Engineering Drawing)
MATH 1100 (Pre-Calculus)
MREK 2103 (Marine Engineering Knowledge)
PHYS 1100 (Physics)
WKPR 1103 (Fitting Shop)

TERM 2

CHEM 1100 (Chemistry)
CMSK 1200 (Technical Reporting)
ELTK 1200 (Electrotechnology)
MATH 1101 (Introduction to Calculus)
MECH 1100 (Mechanics)
MREK 2203 (Marine Engineering Knowledge)
WKPR 1104 (Machine Shop)

TERM 3

CNTL 2102 (Instrumentation, Controls and Automation)
ELTK 2103 (Electrotechnology)
ELTR 1101 (Electronics for Instrumentation)
FLDS 2100 (Fluid Mechanics)
MREK 3103 (Marine Engineering Knowledge)
TRMO 2100 (Thermodynamics)

TERM 4

CNTL 2105 (Electro-Mechanical Logic)
CNTL 2202 (Instrumentation, Controls & Automation)
FLDS 3100 (Hydraulics and Pneumatics)
MREK 3201 (Marine Engineering Knowledge)
MREK 3203 (Marine Engineering Knowledge)
TRMO 3101 (Applied Thermodynamics - Refrigeration and Air Conditioning)

PROGRAM HIGHLIGHTS

This program is designed to graduate students with a variety of strengths that can be used in a large array of employment areas.

- Discipline-related and application courses are supplemented by further courses in Engineering Drawing and Chemistry to support course content.
- The program prepares students for employment with the military, technical sales, and engineering companies in both marine and land-based installation, maintenance, calibration, and repair. This preparation is supported by courses in Hydraulics, Instrumentation, Electronics and Controls.
- Some students find employment as technicians on board ships, and this is reflected by the inclusion of marine applications in many courses.
- The program is designed to meet the ongoing requirements of the Canadian Navy for the academic and technical education of Technicians responsible for repair and operation of marine systems on board Canadian Navy vessels.

TECHNICIAN DIPLOMA - REMOTELY OPERATED VEHICLES (ROV OPERATOR)

MISSION

This two year ROV program is designed to:

- Train students in ROV piloting, hydraulics, electrical, and underwater navigation.
- Train students in ROV deployment methodologies that encompass safety, inspection and operation.

PROGRAM OVERVIEW

The ROV program is designed to prepare graduates to enter the workforce with a sound background in electronics, hydraulics, electrical and workplace safety.

Main Areas of study

- In the first year, students begin studying physics, chemistry, math, introductory courses to programming and electrical technology. Engineering graphics and technical reporting is another feature. ROV systems are introduced very early and a descriptive oceanography course is a valuable addition.
- Following term 2 of the first year, the 5 week technical session teaches hands on experience with electronic fabrication and control electronics used in ROV.
- The second year focuses on various industrial electronics & controls, fluid mechanics and hydraulics related to ROV operations. A workshop practice adds a practical dimension to the theoretical knowledge. The term 4 in the second year concentrates on ROV launch, recovery and maintenance that form a major part of work for the graduates in the ROV industry. On the electrical side, interfacing techniques, data communication and underwater acoustics help in understanding the communication in ROVs.
- Following term 4 is a 6 week technical session where students get hands on experience piloting ROVs as well as simulation. This technical session also includes safety training required to work in the industry.
- Finally Students do an 8 week work term with local and international ROV industries. This makes them a quick fit in any industry they seek employment.

Characteristics of Graduate

Successful graduates will have a proven work ethic and an excellent understanding of ROV operations and design including piloting, hydraulics and work safety, preparing them for initial employment as a ROV operator.

Accreditation Status

- **The ROV program is intended to meet the criteria from the Canadian Technology Accreditation Board (CTAB).**
- **Graduates are eligible for Diver Certification Board of Canada certification as an ROV Operator.**

PROGRAM ENTRY

(Refer to Admissions section of this Calendar for general information regarding Advanced Standing.) Applicants, who have completed a three year diploma of technology in either Electrical Engineering; Electronics Engineering; Mechanical Engineering or Marine Engineering, at another accredited post-secondary institution, or at the Marine Institute, may be eligible to receive Advanced Standing in the program. They commence their studies in Term 3 of this program, with the possibility of requiring a three week bridging program to take place before the start of the fall academic semester for term 3.

PROGRAM STRUCTURE

Length of the Program:

- 2 academic years (except for advanced standing students)

Number of Semesters:

- Four (4) 13 week academic semesters, two (2) technical sessions and an eight week work term

Number of Courses:

- 34 courses in 2 years of study

Work Terms

- Students do a 320 hour work term at the end of semester 4

Topics covered in each semester

- Refer to program calendar – Main areas of study

PHYSICAL REQUIREMENTS

Proof of physical fitness must be provided by way of a valid CAPP offshore medical from an approved physician for registration in this program. Contact the Registrar's Office for a list of physicians approved to conduct the CAPP medical.

CAREERS

Information about the industry

- Remotely Operated Vehicles (ROV) and Autonomous Underwater Vehicles (AUV) are used most notably in the offshore oil and gas, nuclear, military, law enforcement, pipeline, and cable industries, as a substitute or supplement to commercial (manned) diving operations. These vehicles are especially suited for hazardous and difficult underwater operations.
- Due to the increased complexity in ROV/AUV operations, offshore operators have started to demand a higher level of quality assurance for ROV operators. Skills required by ROV/AUV operators include piloting, hydraulics, electrical & electronics and general workplace safety. There are few educational institutions in the world that offer ROV training.

TECHNICIAN DIPLOMA - REMOTELY OPERATED VEHICLES (ROV OPERATOR)

PROGRAM OUTLINE

TERM 1

CHEM 1100 (Chemistry)
CMSK 1104 (Introduction to Technical Reporting)
CPSK 1102 (Introduction Applied Programming)
ELTK 1100 (Electrotechnology)
MATH 1101 (Introduction to Calculus)
PHYS 1100 (Physics)
SFTY 1104 (WHMIS)

TERM 2

ELTK 1200 (Electrotechnology)
ELTR 1301 (Control Electronics for ROV)
ENGR 1202 (Engineering Graphics)
MATH 1200 (Calculus)
ONGR 1200 (Descriptive ONGR)
PHYS 1200 (Physics)
ROVO 2200 (Introduction to ROV Systems)

TECHNICAL SESSION 1

ELTK 1303 (Electrical Machines and Power Systems)
ELTR 1104 (Electronic Fabrication Techniques)
ONGR 1301 (Instrumentation Oceanography)

TERM 3

ELTK 2118 (High Voltage Safety)+
ELTR 2102 (Digital Logic)
ELTR 2116 (Industrial Electronic and Controls)
FLDS 2108 (Introduction to Fluid Mechanics & Hydraulics)
ROVO 2201 (ROV Operations)
WKPR 2118 (Workshop Practice)

TERM 4

ELTK 2200 (Marine Electrical Troubleshooting)
ELTR 2115 (Data Communications)
ELTR 2214 (Interfacing)
OMAP 2000 (Underwater Acoustic Applications)
ROVO 2202 (ROV Maintenance)
ROVO 2204 (Launch & Recovery Systems or LARS)

TECHNICAL SESSION 2

(Pilot Training - 4 weeks)

ROVO 2300 (ROV Ship Interaction)
ROVO 2301 (ROV pilot Training)
ROVO 2302 (Simulator Training)

(Safety Training - 2 weeks)

SFTY 1102 (Basic First Aid (**STCW A-VI/1-3**))
SFTY 1128 (BST - Basic Survival Training)
SFTY 2101 (H2S Alive)
SFTY 2301 (Fall Protection)

WORK TERM

WKTM 1105 (Work Term (8 weeks))

Types of Companies Graduate will find Work

- Graduates of the program typically find work in AUV/ROV manufacturing companies, marine offshore industries, nuclear, military, law enforcement, pipeline and cable industries.

Types of Job Titles

- See sample job description

Location

- The industry is a global one and graduates should expect to work in various locations around the world.

Sample Job Description

ROV Pilot/Technician

- Repair and maintain Remotely Operated Vehicles and the associated support systems including Tether Management Systems, Winch and Launch and Recovery Systems, and Power Generation Systems
- Perform electrical, electronic, hydraulic and mechanical maintenance and repair duties for a multitude of electro/hydraulic/mechanical systems
- Perform piloting duties for a multitude of subsea tasks including general visual inspections, survey, specialty tooling operation, construction, installation, pipeline and cable laying, search, salvage and recovery, and offshore oil drilling support
- Perform support duties including navigation and sonar operation, multimedia recording and record keeping, manipulator operation, inventory, planned and preventative maintenance, updating system specifications, logs and registers
- Opportunity to work globally

ROV Supervisor

- Act as team lead for operation, maintenance, and repair of Remotely Operated Vehicle
- Plan ROV missions
- Act as liaison between ROV crew and vessel
- Accept responsibility for safe and effective ROV operations
- Accepts responsibility for documentation of ROV operations
- Participates in daily planning of offshore installation activity

TECHNICAL CERTIFICATE - AQUACULTURE (MUSSEL)

This is technical certificate-level program designed to up-grade the skills of existing mussel farm workers and to train new employees for entry into the mussel aquaculture industry.

PROGRAM ENTRY

Applicants should possess the equivalent of Grade 9 education or be eligible for entry under mature student status.

PROGRAM STRUCTURE

The method of instruction and course delivery will be a combination of practical and theory utilizing classrooms for community-based instruction (i.e. near mussel farming regions) and access to local farm sites for some practical components.

CORE COURSES

5 Mandatory Courses and 1 Work Experience. Composed of:

- 2 Basic Safety courses
- 3 Mussel Sector courses
- 1 Work Experience (minimum of 25 days; work time credited after completion of 3 Mussel Sector core courses)

ELECTIVE COURSES

7 Elective Courses in total

- 1 from ELECTIVES (Safety)
- 6 from ELECTIVES (Mussel and Other Sector)

Total Courses Required to Complete Technical Certificate — Aquaculture (Mussel)

- 12 Courses
- 1 Work Experience

Total Program Duration: Minimum 56 days (11-12 weeks)

PROGRAM OUTLINE

CORE – Complete ALL

SFTY 1125 (Small Vessel Operator Proficiency)

SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))

500534 (Mussel Spat Collection and General Biology)

500535 (Mussel Farm Stocking Capacity)

500536 (Mussel Harvesting, Handling and Processing)

500539 (Aquaculture Work Experience)

ELECTIVES (Safety) – Complete 1 course

SFTY 2102 ((MED A3 - Marine Emergency Duties for Small Vessels)

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

AQUA 0014 (500540) (Basic Farm Safety)

SFTY 0002 (202310) (Oil Spill Response Awareness)

ELECTIVES (Mussel and Other Sector) – Complete 6 courses

500537 (Mussel Site Maintenance)

500538 (Mussel Marketing and Management)

500548 (Basic Mathematics for Aquaculture Workers)

500523 (Outboard Motor Maintenance)

MARP 0004 (500542) (Marine Hydraulics)

MARP 0005 (500543) (Small Diesel Repair and Maintenance)

FITE 0005 (500547) (Ropework)

SFTY 0001 (500545) (Basic Boat Skills)

500544 (Vessel Maintenance)

500541 (Farm-Based Quality Certification)

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

AQUA 0014 (500540) (Basic Farm Safety)

SFTY 0002 (202310) (Oil Spill Response Awareness)

CORE COURSES:

SFTY 1125 (Small Vessel Operator Proficiency)

This course is designed to provide candidates with the skills and knowledge to act as the operator of commercial vessels up to 5 gross tonnage, other than tugs, and fishing vessels, and for fishing vessels up to 15 gross tonnage or 12 meters overall length engaged on a near coastal, class 2 or a sheltered waters voyage. This course has been developed in accordance with the Transport Canada Marine Safety TP 14692 E.

SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))

As delivered by the approved training provider.

500534 (Mussel Spat Collection and General Biology)

This course will be designed to give workers/participants an overview of factors that impact spat/seed quality and production strategies. This will include biological, environmental and technological issues as they relate to seed and grow-out production logistics.

500535 (Mussel Farm Stocking Capacity)

This course will be designed to give workers/participants of an understanding of the biological and environmental parameters that influence farm stocking and carrying capacities, particularly as they relate to farm set-ups, seasonal stress factors, socking and grading strategies, and farming technology.

500536 (Mussel Harvesting, Handling and Processing)

This course will be designed to give workers/participants an understanding of the impacts of harvesting, handling and processing (primary and secondary) procedures at the farm site and during processing on the final market product quality. It will discuss biological stress factors on the mussels and measures to reduce these impacts.

500539 (Aquaculture Work Experience)

This course will be designed to give workers/participants an opportunity to learn, develop and practice high standards of professional behaviour and performance while in the work environment.

ELECTIVES (Safety):

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

This is a marine emergency duties course designed for crew members of non-pleasure vessels of not more than 150GT which operate not more than 20 miles from shore.

TECHNICAL CERTIFICATE - AQUACULTURE (MUSSEL)

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using the Global Maritime Distress and Safety System, as outlined in the International Maritime Organization's Resolution A 769 (18).

AQUA 0014 (500540) (Basic Farm Safety)

This course will be designed to give workers/participants an understanding of the importance of basic farm safety practices and procedures. It includes Workplace Hazardous Materials Information System (WHMIS), Occupational Health and Safety (OHS), accident incident reporting, and hazards related to various farm systems and activities (e.g. boating, loading and harvesting systems, storage).

SFTY 0002 (202310) (Oil Spill Response Awareness)

This will be an awareness-level course that will provide participants with basic knowledge in oil spill response.

ELECTIVES (Mussel and Other Sector):

500537 (Mussel Site Maintenance)

This course will be designed to give workers/participants an understanding of the importance of their farm management strategies in relation to both the site maintenance and mussel product quality. This will include consideration of the physical site parameters for a sustainable environment, farm worker safety issues, mussel quality as relates to certification and traceability for the products, and general farm equipment maintenance.

500538 (Mussel Marketing and Management)

This course will be designed to give participants an understanding of the impacts of their farming procedures and practices on the final mussel product for the marketplace. It will include consumer trends for certification, traceability, environmental sustainability and considerations for live/fresh and organic products. It will also discuss the practices and scheduling of the different farming activities to optimize product quality and the economic impacts

500548 (Basic Mathematics for Aquaculture Workers)

This course will be designed to give workers/participants knowledge of basic mathematical calculations related to stocking densities, feeding protocols, health and sanitation treatments, harvesting, transporting, record keeping, and other fish farm practices.

500523 (Outboard Motor Maintenance)

This course is designed to give workers/participants a basic level of knowledge and the necessary skills to maintain a variety of outboard motors (two and four stroke).

500542 (Marine Hydraulics)

This course will be designed to give workers/participants a working knowledge of marine hydraulic systems, along with the knowledge to maintain and troubleshoot hydraulic systems.

500543 (Small Diesel Repair and Maintenance)

This will be an introductory course to the repair and maintenance of small diesel engines. It will provide students with an understanding of small diesel technology, repair and service.

500543 (Small Diesel Repair and Maintenance)

This will be an introductory course to the repair and maintenance of small diesel engines. It will provide students with an understanding of small diesel technology, repair and service. The student will also learn the correct use of hand tools, special tools, and testing equipment associated with the small diesel.

FITE 0005 (500547) (Ropework)

This course will be designed to develop the participant's ability to understand the design and construction of various types of ropes, maintenance and inspection of ropes, and regulations governing rope usage. It will include rope safety, use and maintenance for small vessels, moorings and anchoring, and other aquaculture systems. It will be a prerequisite for Salmonid Cage Maintenance course.

SFTY 0001 (500545) (Basic Boat Skills)

This course will be designed to give workers/participants with an increased awareness and knowledge of the small boat safety and skills related to aquaculture activities. It will include theory and practical skills components for inexperienced workers to orient them to basic navigation, proper handling, docking, loading and other fundamental boat skills. This will also include the 'Cold Water' Boot Camp survival.

500544 (Vessel Maintenance)

This course will be designed to give workers/participants a working knowledge of small vessel preventative maintenance and repairs.

500541 (Farm-Based Quality Certification)

This course will be developed to provide the participants with an overview of quality assurance and certification processes that may impact a farm's operational procedures and ultimately the marketing of its products.

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

This is a marine emergency duties course designed for crew members of non-pleasure vessels of not more than 150GT which operate not more than 20 miles from shore.

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using the Global Maritime Distress and Safety System, as outlined in the International Maritime Organization's Resolution A 769 (18).

AQUA 0014 (500540) (Basic Farm Safety)

This course will be designed to give workers/participants an understanding of the importance of basic farm safety practices and procedures. It includes Workplace Hazardous Materials Information System (WHMIS), Occupational Health and Safety (OHS), accident incident reporting, and hazards related to various farm systems and activities (e.g. boating, loading and harvesting systems, storage).

SFTY 0002 (202310) (Oil Spill Response Awareness)

This is an awareness-level course that will provide participants with basic knowledge in oil spill response.

TECHNICAL CERTIFICATE - AQUACULTURE (SALMONID)

This is technical certificate-level program designed to up-grade the skills of existing salmonid farm workers and to train new employees for entry into the salmonid aquaculture industry.

PROGRAM ENTRY

Applicants should possess the equivalent of Grade 9 education or be eligible for entry under mature student status.

PROGRAM STRUCTURE

The method of instruction and course delivery will be a combination of practical and theory utilizing classrooms for community-based instruction (i.e. near fish farming regions) and access to local farm sites for some practical components.

CORE COURSES

5 Mandatory Courses and 1 Work Experience. Composed of:

- 2 Basic Safety courses
- 3 Salmonid Sector courses
- 1 Work Experience (minimum of 25 days; work time credited after completion of 3 Salmonid Sector core courses)

ELECTIVE COURSES

7 Elective Courses in total

- 1 from ELECTIVES (Safety)
- 6 from ELECTIVES (Salmonid and Other Sector)

Total Courses Required to Complete Technical Certificate — Aquaculture (Salmonid)

- 12 Courses
- 1 Work Experience

Total Program Duration: Minimum 56 days (11-12 weeks)

PROGRAM OUTLINE

CORE – Complete ALL

SFTY 1125 (Small Vessel Operator Proficiency)

SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))

500524 (Salmonid Biology and Husbandry)

500525 (Salmonid Feeds and Feeding)

500526 (Salmonid Health and Biosecurity)

500539 (Aquaculture Work Experience)

ELECTIVES (Safety) – Complete 1 course

SFTY 2102 ((MED A3 - Marine Emergency Duties for Small Vessels)

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

AQUA 0014 (500540) (Basic Farm Safety)

SFTY 0002 (202310) (Oil Spill Response Awareness)

ELECTIVES (Salmonid and Other Sector) – Complete 6 courses

500549 (Salmonid Cage Maintenance)

500531 (Salmonid Site Maintenance)

Aqua 0006 (500532) (Salmonid Harvesting, Handling and Processing)

500533 (Salmonid Hatchery and Recirculation Technology)

500548 (Basic Mathematics for Aquaculture Workers)

500523 (Outboard Motor Maintenance)

MARP 0004 (500542) (Marine Hydraulics)

MARP 0005 (500543) (Small Diesel Repair and Maintenance)

FITE 0005 (500547) (Ropework)

SFTY 0001 (500545) (Basic Boat Skills)

500544 (Vessel Maintenance)

500541 (Farm-Based Quality Certification)

SFTY 2102 ((MED A3 - Marine Emergency Duties for Small Vessels)

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

AQUA 0014 (500540) (Basic Farm Safety)

SFTY 0002 (202310) (Oil Spill Response Awareness)

CORE COURSES:

SFTY 1125 (Small Vessel Operator Proficiency)

This course is designed to provide candidates with the skills and knowledge to act as the operator of commercial vessels up to 5 gross tonnage, other than tugs, and fishing vessels, and for fishing vessels up to 15 gross tonnage or 12 meters overall length engaged on a near coastal, class 2 or a sheltered waters voyage. This course has been developed in accordance with the Transport Canada Marine Safety TP 14692 E.

SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))

As delivered by an approved training provider.

500524 (Salmonid Biology and Husbandry)

This is an introductory course designed to give workers/participants an overview of salmonid biology, and principles and practices of general salmonid husbandry. It includes the biological processes and major organ systems of salmonids, the importance of record keeping, principles of salmonid husbandry techniques, water quality monitoring, and the impacts associated with capture and handling stresses.

500525 (Salmonid Feeds and Feeding)

This course is designed to give workers/participants the basic knowledge and understanding of the feeds and feeding of cultured salmonids. It includes the principles of using fish feeds, implications of inappropriate feeding, handling and storing feeds, and monitoring of effective feeding strategies.

TECHNICAL CERTIFICATE - AQUACULTURE (SALMONID)

500526 (Salmonid Health and Biosecurity)

This is an introductory course focusing on the identification and treatment of common salmonid diseases and related biosecurity procedures. It includes the monitoring of fish health, proper biosecurity procedures, recognizing and reporting possible disease concerns, undertaking standard disease prevention measures, and the importance of reporting procedures.

500539 (Aquaculture Work Experience)

This course will be designed to give workers/participants an opportunity to learn, develop and practice high standards of professional behaviour and performance while in the work environment.

ELECTIVES (Safety):

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

This is a marine emergency duties course designed for crew members of non-pleasure vessels of not more than 150GT which operate not more than 20 miles from shore.

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using the Global Maritime Distress and Safety System, as outlined in the International Maritime Organization's Resolution A 769 (18).

AQUA 0014 (500540) (Basic Farm Safety)

This course will be designed to give workers/participants an understanding of the importance of basic farm safety practices and procedures. It includes Workplace Hazardous Materials Information System (WHMIS), Occupational Health and Safety (OHS), accident incident reporting, and hazards related to various farm systems and activities (e.g. boating, loading and harvesting systems, storage).

SFTY 0002 (202310) (Oil Spill Response Awareness)

This will be an awareness-level course that will provide participants with basic knowledge in oil spill response

ELECTIVES (Salmonid and Other Sector):

500549 (Salmonid Cage Maintenance)

This course will be designed to give workers/participants an understanding of principles and maintenance of floating cage/pen containment systems for salmonids. It will include information on types of cage design, the function of the cage components, the monitoring and maintenance of cage condition, and basic/emergency repair skills.

500531 (Salmonid Site Maintenance)

This course will be designed to give workers/participants basic salmonid site maintenance skills. It will include maintenance practices for farm safety, avoidance of fish escapees and husbandry issues, code of containment and escape responses, basic farm equipment maintenance schedules and records, and general environmental maintenance procedures.

500532 (Salmonid Harvesting, Handling and Processing)

This course will be designed to give workers/participants an understanding of the principles of harvesting, handling and processing salmonids to ensure optimal flesh quality for the marketed product. It will include basic sanitation and quality control, the importance of good harvesting and handling procedures to maintain flesh quality and avoid stresses on the fish, basic primary and secondary processing methods, and the importance of harvest record keeping.

500533 (Salmonid Hatchery and Recirculation Technology)

This course will be designed to give workers/participants an understanding of the principles of broodstock and early rearing husbandry, particularly for hatchery operations. It will include basic water quality criteria for incubation and fry/juvenile rearing systems, issues related to feeding and health maintenance, record keeping, and the components of recirculation technology.

500548 (Basic Mathematics for Aquaculture Workers)

This course will be designed to give workers/participants knowledge of basic mathematical calculations related to stocking densities, feeding protocols, health and sanitation treatments, harvesting, transporting, record keeping, and other fish farm practices.

500523 (Outboard Motor Maintenance)

This course is designed to give workers/participants a basic level of knowledge and the necessary skills to maintain a variety of outboard motors (two and four stroke).

500542 (Marine Hydraulics)

This course will be designed to give workers/participants a working knowledge of marine hydraulic systems, along with the knowledge to maintain and troubleshoot hydraulic systems.

500543 (Small Diesel Repair and Maintenance)

This will be an introductory course to the repair and maintenance of small diesel engines. It will provide students with an understanding of small diesel technology, repair and service. The student will also learn the correct use of hand tools, special tools, and testing equipment associated with the small diesel.

FITE 0005 (500547) (Ropework)

This course will be designed to develop the participant's ability to understand the design and construction of various types of ropes, maintenance and inspection of ropes, and regulations governing rope usage. It will include rope safety, use and maintenance for small vessels, moorings and anchoring, and other aquaculture systems. It will be a prerequisite for Salmonid Cage Maintenance course.

SFTY 0001 (500545) (Basic Boat Skills)

This course will be designed to give workers/participants with an increased awareness and knowledge of the small boat safety and skills related to aquaculture activities. It will include theory and practical skills components for inexperienced workers to orient them to basic navigation, proper handling, docking, loading and other fundamental boat skills. This will also include the 'Cold Water' Boot Camp survival.

500544 (Vessel Maintenance)

This course will be designed to give workers/participants a working knowledge of small vessel preventative maintenance and repairs.

500541 (Farm-Based Quality Certification)

This course will be developed to provide the participants with an overview of quality assurance and certification processes that may impact a farm's operational procedures and ultimately the marketing of its products.

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

This is a marine emergency duties course designed for crew members of non-pleasure vessels of not more than 150GT which operate not more than 20 miles from shore.

NASC 2107 (Restricted Operator's Certificate – Maritime Commercial)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using the Global Maritime Distress and Safety System, as outlined in the International Maritime Organization's Resolution A 769 (18).

AQUA 0014 (500540) (Basic Farm Safety)

This course will be designed to give workers/participants an understanding of the importance of basic farm safety practices and procedures. It includes Workplace Hazardous Materials Information System (WHMIS), Occupational Health and Safety (OHS), accident incident reporting, and hazards related to various farm systems and activities (e.g. boating, loading and harvesting systems, storage).

SFTY 0002 (202310) (Oil Spill Response Awareness)

This is an awareness-level course that will provide participants with basic knowledge in oil spill response.

TECHNICAL CERTIFICATE - BRIDGE WATCH PROGRAM

This eight month Technical Certificate Program is designed:

- to prepare the student for employment in the merchant marine or fishing industry.
- to provide the student with a basic understanding of the organization and structure found on a typical merchant marine or fishing vessel.
- to develop and gain the knowledge and experience necessary to become part of a crew as found on any seagoing vessel.

PHYSICAL REQUIREMENTS

Applicants seeking entry to Marine Institute programs which lead to Transport Canada Certification for Seafarer's should note that Transport Canada requires proof of satisfactory physical fitness prior to eligibility for a Transport Canada Certificate of Competence. This includes satisfactory visual acuity, colour vision, and hearing among other physical requirements.

These Programs include the Marine Institute Diplomas of Technology in Nautical Science, Marine Engineering, the Vocational Certificate in Marine Diesel Mechanics and the Technical Certificate in Bridge Watch Program. Proof of physical fitness is also required for students to participate in STCW Marine Safety Training which is a compulsory part of these Programs.

Proof of physical fitness must be provided by way of a signed medical from an approved physician. Signed Seafarer's medical from an approved physician are required for admission to each respective program. The list of physicians approved to conduct the Seafarer's medical are available from the Marine Institute Office of the Registrar. Details of the physical requirements for the Seafarer's Medical may be obtained from Transport Canada at the following address:

Marine Safety Directorate
John Cabot Building, 10 Barter's Hill
P.O. Box 1300, St. John's, NL A1C 6H8
(709) 772-5167

PROGRAM ENTRY

Please refer to Admissions section of this Calendar..

PROGRAM STRUCTURE

The overall objective of this program is to train students in the skills of seamanship so they will be employable in the marine industry.

This program provides training and work experience to facilitate the transition of participants from school to the labour market, as well as offering a retraining opportunity. The design of this program includes the necessary academic skills training, as well as, the skills necessary to fill the position of deckhand. The many aspects of training in this program focus on preparing graduates to function and work confidently in the marine industry. The eight (8) month program is divided into two sections - Off-Site and On-Site training:

- 16-weeks in-class instruction
- 3-weeks Marine Safety Training
- 60 days sea placement

Students undertake hands-on training where appropriate, using facilities in the Marine Institute's rigging room, simulator, and its training vessel

CAREERS

- Graduates can expect to find employment in the marine industry aboard cargo and passenger ships, supply vessels, oil tankers, and fishing vessels.
- Employment in the allied marine industries may also be available.
- This program may be especially useful to fisher persons who have been displaced due to a downturn in the fishing industry but who wish to upgrade and move into another aspect of the trade.
- Upon successful completion of the program students are eligible to write the Bridge Watch Rating examination with Transport Canada.

PROGRAM OUTLINE

CMSK 0103 (Communication Skills)
MATH 0103 (Mathematics)
NASC 0101 (General Ship Knowledge I)
SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))
SFTY 1104 (WHMIS)
SFTY 1114 (Basic Safety - STCW VI/1)

Technical Session

NASC 0201 (General Ship Knowledge II)
SFTY 1117 (Survival Craft - STCW VI/2)
SFTY 1123 (Oil and Chemical Tanker Familiarization STCW'95 A-V/1)
SFTY 1124 (Confined Space Entry Awareness) - **To be delivered after SFTY 1123**
SFTY 1127 (Passenger Safety Management)
SFTY 1129 (Security Awareness Training for Seafarers with Designated Security Duties)

Work Term

WKTM 0011 (Work Term - Bridge Watch Program)

Students who are placed in a sea-based work term, must complete a minimum of 60 Transport Canada approved calendar days as a bridge watch trainee signed onboard a ship. They must have documented Transport Canada testimonials of sea service and must complete the Bridge Watch Program training book . Successful completion of the training book along with a satisfactory employee evaluation will qualify for graduate eligibility and to challenge the Transport Canada Bridge Watch Rating Certification Exam. This course covers the requirement of the Transport Canada TP 10936E (Bridge Watch Rating Training Course).

Applicants to the Marine Institute are advised that employers may require a criminal record check as part of the recruitment and selection process for work term placement

Credit Earned: Technical Certificate
Duration: 8 months
Normal Start: September
School of Maritime Studies
Contact: Admissions Officer
(709) 778-0380
1-800-563-5799 (ext. 380)
email: admissions@mi.mun.ca

TECHNICAL CERTIFICATE - FIRE RESCUE

This is a two semester Program, plus an eight week Workterm, delivered at the Safety and Emergency Response Training (SERT) Centre in Stephenville, NL. It is based on internationally recognized NFPA standards. The courses are taught by full-time, certified faculty and part-time Fire Service personnel.

Students attend lectures in a modern classroom setting and complete realistic skills training in a "live fire" training facility. They gain practical experience by using modern fire suppression equipment in a simulated fire station environment.

To receive the FIRE RESCUE program certificate students must pass all courses within the program and earn certifications from an NFPA accredited agency in the following:

1. NFPA 1006 - Technical Rescuer - Rope Rescue Levels I and II (This included CORE components)
2. NFPA 1006 - Technical Rescuer - Confined Space Entry Levels 1 and II
3. NFPA 1006 - Technical Rescuer - Vehicle Extrication Levels I and II
4. NFPA 472 - Hazardous Materials Awareness
5. NFPA 472 - Hazardous Materials Operations
3. NFPA 1001 Level 1 (Fire Fighter 1)
4. NFPA 1001 Level 2 (Fire Fighter 2)
5. NFPA 1002 (Fire Pumper/Driver Operator).

Please note:

All NFPA testing is conducted by an External Agency. No oral examination will be available for NFPA testing.

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar.

Please Note:

Physical fitness is required for employment as a fire fighter. Therefore, a SERT Fitness test will be administered in the first week of the program. Students will use the results of this test to prepare for the second SERT Fitness test. Successful completion of the second Physical Fitness Test conducted in Semester Two is prerequisite to work term commencement. During this second Physical Fitness Test, Students will be required to wear full turnout gear and SCBA. Timeline required for successful completion is under 10 minutes

PROGRAM OUTLINE

Course Delivery Schedule subject to change: Please note that the order of course delivery may vary.

Semester One:

- FIRE 0027 (Advanced Medical First Responder Level II (80 hours))
- FIRE 0011 (Firefighter - Level 1)
- FIRE 0036 (Hazardous Materials Awareness)
- FIRE 0035 (Hazardous Materials Operations)
- FIRE 0030 (Fire Pumper/Driver Operator)
- FIRE 0040 (Flashover Recognition)

Semester Two:

- FIRE 0026 - (Land Based Reponse to Shipboard Fires - Awareness Level)
- FIRE 0037M - Technical Rescuer - (Vehicle Machinery Extrication Level I and II)
- FIRE 0038M - Technical Rescuer - (Rope Rescue Level I and II)
- FIRE 0039M - Technical Rescuer - (Confined Space Rescue Level I and II)
- FIRE 0034 (Firefighter - Level II)

Work Term

WKTM 0010 (Work Term)

WORK TERM REQUIREMENTS

- Successful completion of all courses within the Fire Rescue Program.
- Successful Completion of NFPA Level 1 Certification
- Successful Completion of Physical Fitness Test conducted in Semester Two. During this second Physical Fitness Test, Students will be required to wear full turnout gear and SCBA. Timeline requirement for successful completion is under 10 minutes.
- Clear Code of Conduct document from a Police Department.

Credit Earned: Technical Certificate - Fire Rescue
2 Semesters (each 13 weeks) plus an 8 week Work Term
School of Maritime Studies

Contact: Marine Institute
Admissions Officer
1-800-563-5799 (ext. 380)
1-709-643-5550 - Safety and Emergency Response Training Centre, Stephenville
(709) 778-0380
email: admissions@mi.mun.ca

CAREERS

The graduate of this program will be qualified for a recruit level position with a municipal or industrial fire department.

This is a Technical Certificate level program designed to provide fish harvesters with the opportunity to improve their position and become a Master or Deck Officer on board fishing vessels. The program prepares candidates to pass the examination set by Transport Canada for Fishing Master Class IV as well as providing them with a practical skill set to assume enterprise head status. This program will provide harvesters with the courses required to obtain Level II certification with the Professional Fish Harvesters Certification Board.

PHYSICAL REQUIREMENTS

Applicants seeking entry to Marine Institute programs which lead to Transport Canada Certification for Seafarer's should note that Transport Canada requires proof of satisfactory physical fitness prior to sitting for any Transport Canada exams. This includes satisfactory visual acuity, colour vision, and hearing, among other physical requirements.

These Programs include the Marine Institute Diplomas of Technology in Nautical Science, Marine Engineering, the Vocational Certificate in Marine Diesel Mechanics and the Technical Certificate in Bridge Watch Program. Proof of physical fitness is also required for students to participate in Marine Emergency Duties (MED) Training which is a compulsory part of these Programs.

Proof of physical fitness must be provided by way of a signed medical from an approved physician. Signed Seafarer's and Marine Institute medicals from an approved physician are required for admission to each respective program. The list of physicians approved to conduct either the Seafarer's or MED medical is available from the Marine Institute Office of the Registrar. Details of the physical requirements for the Seafarer's Medical may be obtained from Transport Canada at the following address:

Marine Safety Directorate
John Cabot Building, 10 Barter's Hill
P.O. Box 1300, St. John's, NL A1C 6H8
(709) 772-5167

PROGRAM ENTRY

Applicants who possess a valid Fishing Master Class IV Certificate issued by Transport Canada may be eligible to receive Advanced Standing in this program. The requirements of Term 1 are waived for students approved for advanced standing and they may commence their studies in Term 2 of the program. (Refer to Admissions section of this Calendar for general information regarding Advanced Standing.)

PROGRAM STRUCTURE

This program is offered over a period of 21 weeks. The first session prepares students to complete Transport Canada examinations for Fishing Master - Fourth Class certification. The second session provides additional courses for completion of the Technical Certificate in Harvesting and for Level II certification with the Professional Fish Harvesters Certification Board.

PROGRAM OUTLINE

TERM 1 - FISHING MASTER IV

Chartwork and Pilotage _ Level 1 (C/P 1)
Navigation Safety _ Level 1 (NS 1)
General Seamanship (Orals) (FM4-O)
Simulated Electronic Navigation _ Limited (SEN-L)
Ship Construction and Stability _ Level 1 (SCS-1)
Radio Operator's Certificate - Maritime Commercial (ROC MC)
SFTY 1106 (Marine Advanced First Aid)
SFTY 1108 (Marine Emergency Duties A1 - Basic Safety (MED A1))

TERM 2 - ADDITIONAL COURSES

FITE 0001 (Introduction to Fishing Gear Construction and Repair)
FRMG 0001 (Fisheries Resource Management)
QLAS 0001 (Handling and Holding of Fish and Shellfish)
MARP 0001 (Fishing Vessel Hull Repair and Maintenance - Fibreglass)
MARP 0002 (General Fishing Vessel Maintenance)
SFTY 1104 (WHMIS)
BSMG 0002 (Introduction to Fishing Enterprise Management)

TECHNICAL CERTIFICATE - MARINE DIESEL MECHANICS

MISSION

This program is designed to provide the technical and practical knowledge necessary to run, maintain and repair marine diesel engines and associated equipment.

PROGRAM OVERVIEW

Main Areas of Study:

- Marine Engineering Knowledge
- Electrotechnology
- Machine Shop Practice
- Welding Practice
- Engineering Drawing

Accreditation Status:

Transport Canada and Canadian accreditation towards Practical Skills Training and Engine Room Rating Certification.

PHYSICAL REQUIREMENTS

Applicants seeking entry to Marine Institute programs which lead to Transport Canada Certification for Seafarer's should note that Transport Canada requires proof of satisfactory physical fitness prior to sitting for any Transport Canada exams. This includes satisfactory visual acuity, colour vision, and hearing among other physical requirements..

Proof of physical fitness is also required for students to participate in Marine Emergency Duties (MED) Training which is a compulsory part of these programs.

Proof of physical fitness must be provided by way of a signed medical from an approved physician. **Signed Seafarer's medical from an approved physician is required for admission to this program.** The list of physicians approved to conduct the Seafarer's medical is available from the Marine Institute Office of the Registrar. Details of the physical requirements for the Seafarer's Medical may be obtained from Transport Canada at the following address:

Marine Safety Directorate
John Cabot Building, 10 Barter's Hill
P.O. Box 1300, St. John's, NL A1C 6H8
(709) 772 - 5167

PROGRAM ENTRY

Please refer to the Admissions section of this Calendar.

PROGRAM STRUCTURE

Length of the Program:

- 1 Year

Number of Semesters:

- 2 Academic Terms + 5 weeks safety related courses + work term

Number of Courses:

- 20 courses, including all required safety courses

Work Terms - 2 Options

- 1 Work Term either 60 days (ship based) or 50 days (land based)

PROGRAM OUTLINE

Term 1

CMSK 0102 (Communication Skills)
ELTK 0102 (Electro-technology)
ENGR 0108 (Engineering Graphics)
MATH 0102 (Mathematics)
MREK 0101 (Marine Engineering Knowledge)
SFTY 1104 (WHMIS)
WKPR 0100 (Fitting Shop)

Term 2

BSMG 0202 (Workplace Preparation)
CMSK 0202 (Communication Skills)
ELTK 0200 (Electro-technology)
MATH 0200 (Mathematics)
MREK 0200 (Marine Engineering Knowledge)
MREK 0201 (Ship Stability and Construction)
WKPR 0103 (Welding Practice)
WKPR 0200 (Machine Shop)

These safety courses will be taken following Term 2:

SFTY 1102 (Marine Basic First Aid (STCW A-VI/1-3))
SFTY 1114 (Basic Safety - STCW'95 VI/I)
SFTY 1117 (Survival Craft - STCW'95 V1/2)
SFTY 1123 (Oil and Chemical Tanker Familiarization STCW'95 A-V/1)
SFTY 1124 (Confined Space Entry Awareness) - **To be delivered after SFTY 1123**
SFTY 1129 (Security Awareness Training for Seafarers with Designated Security Duties)

Work Term

WKTM 0100 (Work Term - Marine Diesel Mechanics)

PROGRAM HIGHLIGHTS

This program prepares graduates for either successful sea-going career as an engine room rating or a shore based career as an engine technician

Students may complete either a 60 day sea-going work term or a 50 day shore based work term.

Transport Canada Certification

Upon graduation Transport Canada recognizes this program as meeting both the Practical Skills Training for Marine Engineers and the Engine Room Rating Training Program requirements. Upon successful completion of a Transport Canada approved (60 day) work term the graduate may qualify to write the Transport Canada Engine Room Rating Certificate exam (proof of graduation and eligible sea service must be submitted to transport Canada)

CAREERS

Graduates of the Marine Diesel Mechanics Technical program can expect to gain employment as an Engine Room Rating on merchant vessels including those of The Canadian Coast Guard. Employment can also be found on board offshore drilling platforms, at marine service centres, marine fabrication and repair yards as well as in the marine engine service industry.

Sample Job Descriptions:

Sea Based

- Work as an engine room rating onboard commercial or government vessels, work as a mechanic on oil drilling platforms.

Shore Based

- Work as an engine mechanic in engine repair shops or as a marine technician in marine industrial fabrication/repair facilities.

TRANSPORT CANADA PROGRAMS

Under the Canada Shipping Act, Transport Canada has the responsibility for the examination and certification of seafarers in Canada. Under the same legislation, specific regulations and related related Transport Publications¹, spell out the details which govern the rights and responsibilities of seafarers who hold either deck or marine engineering Certificates of Competence (Certificates) issued by Transport Canada.

Part of the federal responsibility, in addition to enacting and enforcing the rules and regulations, is to provide the opportunity for seafarers to attend education and training institutions and receive the appropriate preparation for such examinations. To carry out this mandate Transport Canada has designated several schools in Canada as being approved for these purposes. The Fisheries and Marine Institute of Memorial University of Newfoundland is a designated institution.

The Marine Institute carries out its agreements with Transport Canada in several ways. These include the sponsoring of cadet programs for deck and engineering students (diplomas of technology), the provision of recognized pre-sea instruction (technical certificates), giving instruction in the many courses that make up the various certificates issued by Transport Canada and, in some instances, acting as the examiner on behalf of Transport Canada.

PROGRAM ENTRY

The process for, and regulations governing, application for admission to Transport Canada Certification Programs falls under Application for Admission to Non-Degree Programs described in the section of this Calendar relating to Admission to the Marine Institute. Please refer to that section for details on how to apply for admission.

All Transport Canada courses offered by the Marine Institute lead the candidate to apply for Transport Canada certificates of competency. To attain a Transport Canada certificate of competency the candidate requires practical experience either at sea (Deck Certificates) or shop/shipyard/ sea time (Engineering Certificates). For the periods of time required for each certificate of competency the applicant is referred to the Marine Personnel Regulations found at <http://laws.justice.gc.ca/eng/regulations/SOR-2007-115/> and the Transport Canada document TP2293E (The Examination and Certification of Seafarers) available at the nearest Transport Canada office, on the Transport Canada web site at <http://www.tc.gc.ca/publications/en/tp2293/pdf/hr/tp2293e.pdf> or libraries in which government documents are found..

Transport Canada will normally assess practical experience to determine the appropriate level of certificate a candidate for certification is qualified to attempt. It is the applicant's responsibility to ensure he or she is familiar with Transport Canada's eligibility requirements, listed under TP2293E, prior to seeking certification with Transport Canada.

All seafarers must meet certain minimum medical standards before they will receive any certificate of competency issued by

Transport Canada. The medical certificate is described in the Marine Personnel Regulations and contains the standards found in TP 11343 (Medical Examination of Seafarers - Physicians Guide).

In addition, the Marine Institute requires medical standards be met before a student can complete any of the STCW Marine Safety Training courses which form part of the Transport Canada Certification requirements.

Both of these medicals require forms that must be filled out by designated physicians. A list of designated physicians and the medical forms required may be obtained from Transport Canada or from the Marine Institute.

PROGRAM STRUCTURE

The Marine Institute offers a number of courses through its School of Maritime Studies to prepare individuals for Transport Canada Certification examinations as deck officers and marine engineering officers. These courses are offered throughout the year and are organized by the various certificates as programs. The emphasis of these courses is to train personnel who have the necessary sea-going experience to challenge each level of certification. Offerings are always subject to sufficient demand and schedules are prepared each year for the more common and popular certificate programs. While the Marine Institute may not address certain certificates in its schedule of courses in any given period, if there is sufficient industry interest, then the Marine Institute will offer courses to meet that demand.

Information on courses for which the Marine Institute is authorized to conduct exams on behalf of Transport Canada, as well as courses available by distance, is available from the Registrar's Office.

NOTE

The issuance of certificates of competency by Transport Canada is only available to Canadian Citizens and persons with Canadian Landed Immigrant Status. Students should verify their eligibility status with Transport Canada before enrolling in either Transport Canada preparatory or accredited courses.

¹ The Regulations are the Marine Personnel Regulations. The guidelines to these regulations are contained in Transport Canada publication TP2293E. These regulations and guidelines are available at the nearest Transport Canada office, on the World Wide Web at <http://laws.justice.gc.ca/eng/regulations/SOR-2007-115/> or the library at the Marine Institute.

SCHEDULE

The Transport Canada Deck Officer Certification Preparation Program is delivered over four, seven week periods scheduled consecutively throughout the academic year. Each period is referred to as a “Block”. SEN and STCW Safety Training programs are offered throughout the year on an “as required” basis.

Courses for the Transport Canada Engineering Officer Certification Preparation Programs are scheduled during the year.

Please contact the Office of the Registrar for a copy of the schedules in place for the current Academic Year for the Deck Officer / Engineering Officer Certification Preparation courses for the respective Certificates of Competency. The Marine Institute reserves the right to cancel any course due to insufficient enrollment.

TUITION AND OTHER FEES

Tuition

All students enrolled in Transport Canada Certification Preparation Programs are subject to the Marine Institute’s Fees Payment Policy and are required to pay Marine Institute Student Union and Health Plan fees. Further details are provided in the Fees and Fees Payment information included in this Calendar.

Components for the Deck Officer Certification Preparation Programs are offered in Block I and Block II of the Fall Semester and Block III and Block IV of the Winter Semester. Any student attending two consecutive blocks in a given semester, will choose the components they wish to complete during the semester and pay all applicable fees upon registration in Block I and Block III respectively. Students who will be attending in Block II, or Block IV only, will be required to register at the beginning of that Block.

Students registering for Engineering Officer Certification Preparation programs are required to register and pay all fees on the first day of each course offering. Tuition fees for Engineering Officer Certification Preparation courses are set on a per course basis, not on the number of weeks allotted for each course.

All fees are subject to change.

Confirmation Fees

Students who plan to enroll in a combination of courses which includes any of the following simulation or practical courses are required to pay a Confirmation Fee for each course

- Simulated Electronic Navigation (SEN) I
- Simulated Electronic Navigation (SEN) II
- Propulsion Plant Simulation Level I
- Propulsion Plant Simulation Level II
- Global Maritime Distress and Safety Systems (GMDSS)
- Marine Emergency Duties (MED)
- Marine First Aid
- ECDIS

This fee is in addition to the Confirmation Fee required for the particular Block or course in which the student has been admitted. Upon registration in these courses, the Confirmation Fee is credited towards the student’s tuition charges and the tuition fees owing are thereby reduced by that amount.

Refunds

Upon formal withdrawal from the Marine Institute or through Drop/Add procedures, a student may be eligible for a refund or credit towards tuition for the next scheduled course. This process must be carried out using the Marine Institute’s Transport Canada Registration form.

The following is an excerpt from the Marine Institute Fees Payment Policy and relates to tuition payments for **Less than Full Semester Courses**; “please refer to the Marine Institute Fees Payment and Refund Policy as described under Fees and Financial Information”.

Student Fees Refund Policy

Less than full semester programs:	Refund
In the first 5 days of classes	100%
6 class days to 8 class days	50%
9 class days to 11 class days	25%
12 class days and beyond	No refund
Full semester programs:	Refund
In the first 11 days of classes	100%
Day 12 to Day 16 of classes	50%
Day 17 to Day 21 of classes	25%
Day 22 and beyond	0%

NOTE

No refund for programs 3 weeks or less.



Aquaculture Work Experience (SRS#500539)

This work experience is designed to provide the student with practical experience in salmonid or mussel farm operations. To meet the graduation requirements of the Technical Certificate in Aquaculture, the student must successfully complete the Aquaculture Work Experience.

Prerequisites - For those enrolled in the Technical Certificate in Aquaculture (Salmonid), successful completion of core courses:

- Salmonid Biology and Husbandry (SRS 500524);
- Salmonid Feeds and Feeding (500525); and
- Salmonid Health and Biosecurity (500526).

For those enrolled in the Technical Certificate in Aquaculture (Mussel), successful completion of core courses:

- Mussel Spat Collection and General Biology (500534);
- Mussel Farm Stocking Capacity (500535); and
- Mussel Harvesting, Handling and Processing (500536).

Schedule - Minimum of 175 hours (25 days)

AQUA 0006 (Salmonid Harvesting, Handling and Processing)

This course is designed to enable aquaculture workers to gain understanding of the important role harvesting, handling and processing has on product quality and food safety.

Harvesting; Handling and Holding; Processing

Duration - 2.5 days

AQUA 0014 (Basic Farm Safety)

This course is designed to give workers/participants an understanding of the importance of basic farm safety practices and procedures. It includes Occupational Health and Safety (OHS), accident incident reporting, hazards related to various farm systems and activities (e.g. boating, loading and harvesting systems, storage), and safe work procedures.

Workplace Health Safety and Compensation Commission (WHSCC); Occupational Health and Safety (OH&S); Hazards; New and Young Workers; Personal Protective Equipment (PPE); Safe Work Practices and Procedures

Prerequisite - WHMIS or SFTY 1104 (WHMIS)

Duration - 2.5 days

AQUA 4100 (Aquaculture Seminar Series)

This course will present selected topics of relevance to the development of the aquaculture industry.

Cod Farming; Rainbow Trout; Salmon Farming; Other Marine Finfish; Eel; Fish Food Production; Mussel Culture; Scallop Culture; Other Shellfish; Provincial Government (Aquaculture Mandate); Federal Government (Aquaculture Mandate); The Role of Aquaculture Associations; Student, Faculty, Visiting Lecturer Presentations

Duration - 13 weeks

Lectures - 1.5 hours/week

AQUA 4101 (Handling & Processing Aquaculture Products)

This course is designed to familiarize aquaculture students with the handling, processing and preservation of Newfoundland & Labrador farmed fish and shellfish.

Fisheries Overview; Product Costing; Food Safety and Quality Control; Overview of Sanitation; Farmed White Fleshed Fish Handling and Processing; Farmed Salmon and Trout Handling and Processing; Farmed Blue Mussel Handling and Processing; Sea Scallop Handling and Processing; Oyster Handling and Processing; Secondary Processing

Duration - 13 weeks

Lectures - 2 hours per week = 26 total hours

Laboratories - 2 hours once per week = 26 total hours

AQUA 4102 (Shellfish Culture)

This course is designed to provide an overview of shellfish culture including mollusk, echinoderm, and crustacean culture techniques.

The Status Quo; Mussel Culture; Oyster Culture; Scallop Culture; Culture of Other Mollusca and Echinoderms (Calm, Abalone and Sea Urchin Culture to be examined); Crayfish Culture; Freshwater Prawn Culture; Shrimp Culture; Lobster Culture; Culture of Other Crustaceans; Seaweed Culture; Future Considerations

Lectures - 39 hours (3 hours per week)

Laboratories - 26 hours (2 hours per week)

AQUA 4103 (Fish Health)

This course is designed to provide an understanding of the epidemiology, pathology, diagnosis and treatment of major diseases affecting cultured species (primarily fish). The laboratory component will address various diagnostic and applied techniques essential to fish and shellfish health management.

Introduction to the Disease Process; Anatomy and Physiology; Stress and the Disease Process; Immunity; Viral Diseases; Bacterial Diseases; Fungal Diseases; Parasitic Diseases; Non-Infectious Diseases; Disease Control; Legislation; Epidemiology

Lectures - 26 hours (2 hours per week)

Laboratories - 39 hours (3 hours per week)

AQUA 4104 (Fish Nutrition)

This course is designed to provide and understanding of nutrient requirements and feed practices for finfish.

Introduction to Fish Nutrition Studies; Feeding Habits and Adaptations; Nutrient Requirements; Diet Formulation; Larval Feeds; Food Requirements; Feeding Practices; Natural Foods in Extensive Culture; Growth and Feeding; Current Developments

Duration - 13 weeks

Lectures/Laboratories - 3 per week

COURSE DESCRIPTIONS

AQUA 4106 (Practical Aquaculture, Part I - (SFTY 1125 - Small Vessel Operator Proficiency)

This course is designed to provide candidates with the skills and knowledge to act as the operator of commercial vessels up to 5 gross tonnage, other than tugs, and fishing vessels, and for fishing vessels up to 15 gross tonnage or 12 meters overall length engaged on a near coastal, class 2 or a sheltered waters voyage.

This course has been developed in accordance with the Transport Canada Marine Safety TP 14692 E.

Introduction; Terminology; Vessel Hull Types and Configurations; Seamanship; Collision Avoidance Regulations; Stability; Safety on the Job; Marine Weather; Navigation, Positioning Equipment and Installations; Power Boat Operations; Search and Rescue (SAR) Resources; Protection of the Marine Environment; Departure Preparation; Quick Reference Checklists

Duration - 28 hours

(Practical Aquaculture, Part II - AQUA 4110 (Aquaculture Cage Design and Maintenance)

This is an introductory course outlining floating net cages as containment systems for finfish.

Introduction to Cage Aquaculture; Cage Type and Design; Cage Collars; Flotation; Net Bags; Mooring of Cages; Predator Devices; Cage Maintenance and Cleaning; Commercially Produced Aquaculture Cages; Care, Maintenance and Use of Ropes; Net Mending and Patching; Cage Construction Project; Flume Tank Observation of Model Cage

Duration - 35 hours

(Practical Aquaculture, Part III - SFTY 1101-First Aid)

This is the St. John Ambulance standard first aid course which has been created to satisfy the needs of the general business and industrial market.

Compulsory Modules; Elective Modules

Duration - 3 days

AQUA 4107 (Finfish Culture)

This course is designed to provide an overview of finfish culture including husbandry practices and culture technology for salmonids, marine species and warm water fish.

Aquaculture: An Overview; Water Requirements; Salmonids; Marine Species; Warmwater Species

Duration (DU) - 13 weeks

Lectures (LC) or Laboratories (LH) - 3 hours once per week AND 2 hours once per week = 65 hours total

AQUA 4108 (Site Selection)

This course is designed to provide an overview of the criteria for selecting a suitable aquaculture site, including land-based and open-water sites for finfish and shellfish species.

Water Requirements; Technical Site Studies; Finfish and Shellfish Farm Planning

Duration - 65 hours total

AQUA 4109 (Aquaculture Seminar Series II)

This course will present selected topics of relevance to the development of the aquaculture industry.

Cod Farming; Rainbow Trout; Salmon Farming; Other Marine Finfish; Eel; Fish Food Production; Mussel Culture; Scallop Culture; Other Shellfish; Provincial Government (Aquaculture Mandate); Federal Government (Aquaculture Mandate); The Role of Aquaculture Associations; Student, Faculty, Visiting Lecturer Presentations

Duration - 13 weeks (1.5 hours per week)

AQUA 4111 (Aquaculture and the Environment)

This course is designed to provide an overview and understanding of current issues related to aquaculture and the environment.

Introduction to Sustainable Aquaculture Environmental Issues; Population and Fisheries Interactions; Physical Impacts of Aquaculture Facilities; Therapeutics and Fish Farming; Benthic and Water Column Impacts; Fish Meal Supply, Contaminants and Food Safety; Beneficial Impacts; Integrated Fish Farming; Environmental Management Practices; Responsible Aquaculture

Duration - 13 weeks

Lectures - 3 hours/week

AQUA 4112 (Practical Facility Maintenance and Animal Husbandry)

A practical course to introduce students to recirculating facility maintenance and management, and salmonid animal husbandry (from broodstock maintenance through fry rearing).

Marine Institute (MI) Aquaculture Facility; Activities and Maintenance; Essential Calculations; Animal Husbandry

Duration - 52 hours

Laboratory - 4 hours/week for 13 weeks

AQUA 4113 (Aquaculture Engineering)

This course is designed to provide students with an understanding of engineering principles as they apply to aquaculture technology.

Properties of Water; Water Supply; Mechanics of Fluids; Water Level and Flow Measurement; Pumps; System Construction Materials; Pond Systems; Effluent and Filtration; Recirculation Systems; Disinfection; Aeration; Degassing; Heating and Cooling; Cage Systems; Flume Tank; Observations of Model Cage

Duration (DU) - 13 weeks

Lectures (LC) - 4 hours per week = 52 total hours

Laboratories (LH) - 2 hours every second week = 12 total hours

AQUA 4114 (Ropework and Net Mending)

This course is designed to develop the participant's ability to understand the design and construction of various types of rope, maintenance and inspection of ropes, and regulations governing rope usage. It will include rope safety, rope use and maintenance for small vessels, and moorings and anchoring. It will also enable them to perform basic aquaculture net mending tasks.

Ropes; Knots, Bends and Hitches; Ropework/Working with Ropes; Rope Safety; Net Mending and Patching

Duration - 13 weeks

Laboratory - 3 hours once per week = 39 total hours

BIOL 1100

An introductory level course designed to provide knowledge of plant and animal biology, and their relationships on foods.

The Chemical and Cellular Basis of Life; The Biology of Organisms; The Perpetuation of Life; Biology of Population and Communities; Diversity of Organisms

Duration (DU) - 13 weeks

Lectures (LC) - 3 hours per week = 39 hours total

Laboratories (LH) - 2 hours once per week - 26 hours total

BIOL 2100 (Aquatic Ecology)

This is a second level course designed to cover in moderate detail various aspects of aquatic ecology with emphasis on marine ecology. A strong emphasis will be placed on the laboratory sessions which will introduce students to the kinds of data collected during ecological studies in aquatic environments.

Ecology and Ecosystems; Primary Production and Feeding Relationships; Population Ecology; Ecological Cycles; Aquaculture Ecology

Prerequisite - BIOL 1100 (Biology); STAT 2108 (Applied Statistics)

Duration - 13 weeks

Lectures - 2 hours per week = 26 total hours

Laboratories - 3 hours once per week = 39 total hours

BIOL 2102 (Microbiology)

This course is designed to prepare students for the Food Safety 2101 and Biology 2202 courses.

Introduction to Microbiology; History of Microbiology; Microscopy and Staining; Prokaryotic Microorganisms; Microbial Growth; Viruses; Fungi; Protozoa; Algae; Microbial Genetics; Classification of Prokaryotic Microorganisms; Control of Microbial Growth; Interaction of Microbes and Host; Aquatic Microbiology

Prerequisite - BIOL 1100 (Biology)

Lectures - 39 hours

Laboratories - 39 hours

BIOL 2105 (Microbiology)

This is an introductory level course designed to provide students with an awareness and competency in basic microbiological techniques and applications.

Introduction to Microbiology; Microscopy and Staining; Prokaryotic Microorganisms; Eukaryotic Microorganisms; Viruses; Microbial Growth; Control of Microbial Growth; Drinking Water and Wastewater Treatment; Biogeochemical Cycles

Prerequisite - BIOL 1100 (Biology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hours total

BIOL 2201 (Microbiology)

This is an introductory level course designed to prepare the students for courses in marine environmental technology.

Introduction to Microbiology; Microscopy and Staining; Prokaryotic Microorganisms; Eukaryotic Microorganisms; Viruses; Microbial Growth; Control of Microbial Growth; Marine Environment and Microorganisms; Microbial Ecology of the Oceans; Marine Microbes and Human Society; Drinking Water and Wastewater Treatment

Prerequisite - BIOL 1100 (Biology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

BIOL 2202 (Food Microbiology)

This course will introduce students to the microorganisms and their activities in food production.

Introduction to Food Microbiology; Characteristics of Microorganisms Associated with Foods; Factors Influencing Microbial Growth in Foods; Food Spoilage; Food Preservation Methods; Food Borne Diseases; Microbiological Analysis of Foods; Shelf-life and Challenge Studies; Beneficial Uses of Microorganisms in Foods

Prerequisite - BIOL 2102 (Microbiology) or BIOL 2105 (Microbiology)

Lectures - 39 hours

Laboratories - 39 hours

BIOL 2300 (Fish Identification and Remediation)

This is an intermediate level course that develops the student's understanding of the types of fish that inhabit marine and freshwater habitats of North America. The focus of the course is identification of species, habitat and habitat protection and general fish health.

Fish Characteristics and Classification; Fish Habitats; Fish Identification; Fish Health; Fish Habitat Regulations

Prerequisite - BIOL 1100 (Biology)

Duration - 70 hours

Lecture - 35 hours

Laboratory - 35 hours

COURSE DESCRIPTIONS

BIOL 3100 (Marine Biology)

This is an intermediate level course which develops the student's understanding of the types of living organisms which inhabit the ocean, tidal, and near shore areas. The interaction of the different species is emphasized throughout the course.

Marine Organisms: Function and Environment; Organisms of the Sea Bed; Organism of the Open Sea; Seaweeds and Benthic Microorganisms; Toxicology and Histopathology

Prerequisite - BIOL 1100 (Biology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

BIOL 4104 (Food Microbiology)

The purpose of this course is to introduce the student to the microbiology of foods. The important parameters controlling microbial growth in foods, the microorganisms involved in spoilage of foods and principles of microbial spoilage and their control will be discussed. Students will also be introduced to the methods of microbiological analysis of foods.

Introduction; Characteristics of Microorganisms Associated with Foods; Sources of Microorganisms in Foods; Factors Influencing Microbial Growth in Foods; Food Spoilage; Food Preservation Methods; Microbial Analysis of Food and Food Environment; Beneficial uses of Microorganisms in Foods; Shelf-life and Challenge Studies

Duration - 13 weeks

Lectures - 39 hours total

Laboratories - 39 hours total

BIOL 4105 (Water and Wastewater Microbiological Analysis)

This course is designed to provide an overview of microorganisms related to water and wastewater and the techniques for monitoring the microbiological safety and quality of water.

Introduction to Microbiology; Microscopy and Staining; Prokaryotic Microorganisms; Microbial Growth; Viruses; Fungi; Protozoa; Algae; Helminthes; Control of Microbial Growth; Antimicrobial Agents; Bacterial Classification; Microbiological Examination of Water; Drinking Water Guidelines; Microbial Indicators of Pollution; Biofilms

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

Laboratories - 3 hours once per week = 39 total hours

BIOL 4200 (Water and Wastewater Microbiology)

This course is designed to provide students with an overview of the microbiology of water and wastewater treatment processes.

Water and Wastewater Treatment; Activated Sludge Process; Bulking and Foaming in Activated Sludge Plants; Biofilms and Attached Microbial Growth; Waste Stabilization Ponds; Sludge Microbiology; Anaerobic Digestion of Wastewater and Sludge; Biological Aerosols and Bioodors from Wastewater Treatment Plants; Public Health Aspects of Wastewater and Biosolids

Disposal; Wastewater Systems Effluent Regulations; Water and Wastewater Disinfection; Microbiological Aspects of Drinking Water Distribution; Drinking Water Guidelines; Methods of Isolation and Identification of Microorganisms; Waterborne Pathogens and Parasites; Biotechnology and Pollution Control

Prerequisite - BIOL 4105 (Water and Wastewater Microbiological Analysis)

Duration - 13 weeks

Lectures - 2 hours per week = 26 total hours

BSMG 0001 (Managing Your Fishing Enterprise)

This course introduces the participants to the fundamentals of managing a fishing enterprise.

The Value of the Newfoundland and Labrador Fishing Industry; The Participants in the Fishing Industry; The Future of the Fishery; Introduction to Business Management; Analyzing Your Fishing Business; Increasing Profits; Developing Your Business Plan; Record Keeping; Taxes

Duration - 10 days

BSMG 0002 (Introduction to Fishing Enterprise Management)

This course introduces the participants to the fundamentals of managing a fishing enterprise.

Introduction to Business Management; Forms of Business; Analyzing Your Fishing Business; Increasing Profits; Developing Your Business Plan; Record Keeping; Taxes

Duration - 5 days (35 hours)

BSMG 0202 (Workplace Preparation)

This course will provide work term and workplace preparation through an overview of employer expectations, an awareness of individual differences and rights, and an appreciation for maritime careers.

Seafaring; Teamwork; Life at Sea; Personal Management; Interpersonal Communication; Codes, Practices and Regulations; Labour Unions; Substance Abuse; Career Preparation, Professionalism and Ethics; Cultural Diversity and Sensitivity

Prerequisite - MREK 0101 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 2 hours/week

BSMG 0300 (Business Skills)

This course is designed to introduce the student to the field of entrepreneurship, including the characteristics of the entrepreneur, the advantages and disadvantages of self-employment, and some of the steps involved in starting a business. It will also focus on the role of providing quality customer service. Students will be able to use the skills and knowledge gained in this course to effectively provide a consistently high level of service to the customer.

Self-Employment; Business Ownership; The Entrepreneur; Identifying Business Opportunities; The Entrepreneurial Process; Business and Government Interaction; Service Quality;

Customer Wants and Needs; Effective Customer Communication

Prerequisite - Successful completion of all courses in Terms 1 and Term 2

Duration - 5 weeks

Lectures - 7 hours/week = 35 hours total

BSMG 1102 (Management Principles)

This course is designed to give participants an understanding of the current business management principles and practices applicable to Canadian industry in general and the food production field in particular. This course will teach participants to develop organizational and planning skills and assist them to function as a team player in food manufacturing operation.

Business and Economic Systems; The Canadian Business System; Forms of Business Ownership; Management Practices; Improving Productivity; Practicing Interpersonal Skills; Leadership Skills; Problem-Solving; Making Decisions; Contemporary Management Issues

Duration - 39 hours total

BSMG 2104 (Policy and Law)

This is an introductory course that looks at various aspects of marine environmental law at the regional, national and international level. It gives the students an overview of various location, the regulatory bodies that deals with them and the interaction between these various bodies.

The Policy Making Process and the Development of Laws and Regulations; International Environmental Initiatives; International Environmental Conventions; National Environmental Acts, Laws and Regulations; Provincial Laws, Acts and Regulations; Municipal Regulations; Environmental Legal Issues

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 2110 (Law and Environment)

This is the first of two advanced level courses designed to bring together the major elements of marine law and the marine environment such that the student might understand the importance of both in their lives as professional seafarers and the intimate connection between the two.

The Law and its Purposes; Marine Insurance; Salvage

Prerequisites - WKTM 1102 (Sea Phase I - Nautical Science)

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 2209 (Product Development)

This course is designed to provide the knowledge and skills necessary to conduct the development of a new product. It focuses on the steps required to develop, process and package a food product.

Introduction to Marketing Concepts; Product Planning; Product Development for the Food Industry; Phases in Product Development; Food Science and Technology; Packaging in the Food Industry

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours

BSMG 3101 (Engineering Economics)

This course covers the basic principles of engineering economy with application to engineering economic decision making. The various methods for economic analysis of alternatives are investigated as well as depreciation methods and income tax consequences.

Basic Concepts of Engineering Economy; Economic Decision Making; Analysis of Multiple Alternatives; Depreciation and Income Tax Calculations

Prerequisite - MATH 1100 (Pre-Calculus)

Duration - 13 weeks

Lectures - 2 hours/week

BSMG 3105 (Shipyard Management)

This is an advanced level course designed to introduce students in the Naval Architecture and Marine Engineering Systems Design programs to the framework and structure of Canadian shipbuilding.

Introduction to the Shipyard; Framework of the Company; The Basic Work Pattern; Tendering; Design Check and Cost Estimating; Government Agencies and Ships; Specification Writing; Ship Contracts; Liability; Shipyard Planning Department; Quality Control; Union Contracts Sub Contractor Agreement

Prerequisite - ENSY 3301 (Ship Engineering Project) or NARC 3102 (Ship Design)

Duration - 5 weeks

Lectures - 6 hours per week = 30 hours total

BSMG 3109 (Marine Law/Ethics & Environmental Stewardship)

This course involves complex environmental issues, marine law and professional ethics as related to the responsibilities of the Marine Engineer employed in Canada's Merchant Marine Industry.

Human Relations; Contemporary Issues; Marine Environment; Marine Environmental Science; Marine Environmental Issues; Pollutants; Preventative Remedies; Response Remedies; Industrial Safety; Ship Management; Canada Shipping Act; Regulations

Duration - 5 weeks

Lectures - 8 hours/week = 40 hours total

BSMG 3111 (Environmental Assessment & Auditing)

This is an advanced level course which deals with the assessment and auditing processes as they pertain to the environmental sector.

Environmental Assessment; Project Analysis; Environmental Auditing; and Environmental Auditing Projects

Prerequisite - BSMG 2104 (Policy & Law)

Duration - 13 weeks

Lectures - 3 hours/week

COURSE DESCRIPTIONS

BSMG 3113 (Personnel Resource Management)

This course will provide students with business and organization management knowledge as it pertains to the marine sector.

Seafaring; Marine Terminology; Human Resources; Marine Engineering Diploma Program Requirements; Personnel Resource Management; Employee Relations; National and International Regulations; Quality and Safety Management

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 3114 (Business of Shipping)

This is an advanced level course designed to build on previous knowledge regarding ships and the business of shipping obtained in earlier introductory courses. It is meant to give the student an in-depth knowledge of the organization of shipping, shipping operations, and the cargo market. Its focus is the business of shipping.

The course is designed to help the ship's officer understand the evolution of the shipping industry; the production of shipping services; the types and organization of shipping operations; the cargo market and its organization; and port operations.

An Overview of International Trade and Transport ; The Freight Market; Supply, Demand, and Shipping Market Cycles; Shipping Costs and Revenue; and The International Environment of Trade and Transport

Prerequisites - NASC 3102 (Cargo Operations); WKTm 2102 (Sea Phase II - Nautical Science)

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 3115 (Law and Environment)

This is the second advanced level course designed to bring together the major elements of marine law and the marine environment such that the student might understand the importance of both in their lives as professional seafarers and the intimate connection between the two.

The Carriage of Goods by Sea; The Environment and the Law; The Ship's Master and the Law

Prerequisite - BSMG 2110 (Law & Environment)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

BSMG 3116 (Ship Management)

This is an advanced level course in shipboard management practices designed for future practicing ship's officers and will lead to an understanding of management practices at sea. It builds on previous knowledge derived from other courses and exposure to actual practice at sea. It is meant to give the student insight into global shipboard management practices and the role they will play as shipboard managers.

Management Issues in Marine Transportation; Basic Principles of Management; The International Safety Management Code (ISM); The International Labour Organization (ILO); The International Transport Federation (ITF); Ship Management and the Master; and Code of Professional Conduct; The International Convention

on Standards of Training, Certification and Watchkeeping for Seafarers, 1995 (STCW '95) with 2010 Amendments

Prerequisites - WKTm 1102 (Sea Phase I - Nautical Science);

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 3117 (Food Law)

An introductory course designed to provide an overview of the provincial and federal food agencies and regulations that exists in Canada.

Introduction to Food Law; Canadian Legal System; Canadian Food Inspection Agency; Health Canada; Food and Drugs Act; Food Labelling Regulations; Food Recalls; Provincial Legislation; International Food Organizations

Lecture - 39 hours

BSMG 3118 (Technical Problem Solving)

This course is designed to provide participants with the methods and techniques to analyze and solve technical problems that arise in the food industry. It will foster a creative and critical thinking approach in solving day-to-day problems that occur in management, employee, materials, and processing aspects of the food industry.

Creative Thinking; Critical Thinking; Problem Solving

Duration - 13 weeks

BSMG 3119 (Management Principles)

This course is designed to give participants an understanding of the current business management principles and practices applicable to Canadian industry in general. This course will teach participants to develop organizational decision-making and planning skills and assist them to function as a team player in the modern workplace.

Business and Economic Systems; The Canadian Business System; Small Business and Entrepreneurship; The Business Functions; Improving Productivity; Practicing Interpersonal Skills; Leadership Skills; Problem-Solving; Making Decisions and Taking Action; Contemporary Management Issues

Duration - 39 hours total

BSMG 3120 (Product Development)

This course is designed to provide the knowledge and skills necessary to conduct the development of a new product and focuses on the steps needed to develop, process and package a food product.

Introduction to Marketing Concepts; Product Planning; The Conceptual Process of Product Development; Product Mix; Product Development for the Food Industry; Phases in Product Development; Food Science and Technology; Packaging in the Food Industry

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours

BSMG 3121 (Environmental Economics)

This course covers introductory economic theory with application to the utilization and valuation of natural resources and environmental projects.

Introduction to Economics; Basic Economic Methods and Tools; Economic Systems and Their Roles in Society; The Organization of Business in Canada; Market Forces and Price Determination; Market Forces and Elasticity; Consumer Behaviour; Economic Indicators; Environmental Economics; The Economy and the Environment; Analytical Tools in Benefits and Costs; Environmental Analysis; Benefit-Cost Analysis

Prerequisite - None

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

BSMG 3122 (Law and Environment)

The purpose of this course is to provide the student with knowledge about and opportunities for practical use of various IMO and Transport Canada conventions and regulations related to the law of the sea and protection of the marine environment.

Introduction to Maritime Law; Law of the Sea; IMO Conventions on Safety of Life at Sea and Protection of the Marine Environment; Anti-Pollution Procedures and All Associated Equipment; Pollution-prevention Requirements

Duration - 13 weeks

Lectures - 4 hours per week = 52 hours total

BSMG 3200 (Introduction to Business)

This course is designed to give participants an understanding of current business practices.

Business in a Changing World; Starting and Growing a Business; Managing for Quality and Competitiveness; Creating the Human Resource Advantage; Marketing: Developing Relationships; Financing the Enterprise

Duration - 3 hours/ week = 39 hours total

BSMG 3204 (Ship Management)

This is an advanced course in shipboard management practices. It builds on previous knowledge and addresses such advanced topics as Port State Control and Management Practices in the multi-ethnic environment commonly found aboard ships at sea. The course is designed to give students an advanced understanding of ship control and inspection under port state principles, ship management in today's personnel environment, crisis management and managing in other adverse situations.

Port State Control; Managing in the Multi-Ethnic Environment; Managing Under Adverse Conditions and the Provision of Care; Women at Sea; Marine Occupational Health and Safety in Canada; Accident/Incident Investigation Practices at Sea

Prerequisites - BSMG 3116 (Ship Management); WKTm 2102 (Sea Phase II - Nautical Science)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

BSMG 3300 (General Ship Knowledge Refresher)

The purpose of this course is to provide the student with knowledge and opportunities for practical use of various IMO and Transport Canada conventions and regulations.

Pollution-Prevention Requirements; International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1995 (STCW '95); Canada Shipping Act, 2001 (CSA 2001); Canadian Regulations and Vessel Documentation; Knowledge of Personnel Management; Canada Labour Code

Prerequisite - BSMG 3104 (Ship Management); BSMG 3116 (Ship Management)

Duration - 20 hours over 7 weeks

Lectures - 15 hours over 7 weeks

Laboratories - 5 hours over 7 weeks

BSMG 3500 (Fundamentals of Canadian Food Laws and Regulations)

This course is designed to introduce the major topics in Canadian food laws and regulations that are fundamental in the manufacturing and trade of safe and compliant food commodities. While Canadian food laws and regulations are the primary focus of this course, some international food laws and regulations will also be introduced.

Introduction to Canadian Legal System; Canadian Food Inspection Agency (CFIA); Federal Food Acts and Regulations; Additional Federal Departments and Agencies; Provincial Food Laws and Regulations; International Food Laws and Regulations; Genetically Engineered (GE) Food

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours

BSMG 4102 (Marketing Aquaculture Products)

This course is designed to teach participants the fundamentals of marketing. Emphasis is on the components of marketing as they relate to the fishing industry.

Marketing Concepts; The Marketing System and the Environment; Markets and Buyer Behaviour; Market Research Process; Target Markets and Market Segmentation; Product Planning; Product Strategy; New Product Development; Brands, Packaging and Labelling; Price Determination; Fish Farms and Distribution; Promotion

Duration (DU) - 13 weeks

Lectures (LC) - 3 hours per week = 39 hours total

BSMG 4103 (Fundamentals of Food Law)

Knowledge of food legislation is essential in order to control the safety and quality of foods. This course is designed to address the issues and facts that are important for understanding the system of food regulations that exists in Canada.

Introduction to Food Law; Canadian Legal System; Canadian Food Inspection Agency; Health Canada; Food and Drugs Act; Food Labelling Regulations; Food Recalls; Provincial Legislation; International Food Organizations

Duration - 39 hours total

COURSE DESCRIPTIONS

BSMG 4104 (Business Management)

This course is designed to provide an understanding of the current management principles and practices applicable to industry. The course will include the development of a business plan.

Types of Business Organization; Business Description; Management Principles; Productivity and Quality Control; Starting a Business; Sources and Applications of Funding; Financial Reporting; Internal Control and Cash; Financial Statements; Comparative Analysis of Financial Statements; Financial Planning and Budgeting; Business Plan Development; Government Regulation, Taxation and Assistance;

Duration (DU) - 13 weeks

Lectures (LC) - 3 hours per week = 39 hours total

BSMG 4106 (Legal Aspects of Coastal Zone Management)

This course provides a general overview of the legal issues related to the administration of the marine environment. It will review the historical process involved in the making of the new Law of the Sea to regulate the use of the oceans and coastal zones. This course will also discuss some of the principles guiding national interest in their territorial waters and their relationship to the management of the coastal zones.

Historical Background of Ocean Management; National Expansion of the Marine Territory; The Search for International Agreements; The UN Conference on the Law of the Sea; National Legislation; New Fishing Laws and changes in Property Rights; Environment Protection Laws; The Legal Framework of Coastal Zone Management

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 4107 (Conflict Resolution Skills)

This course provides participants with an understanding of the basic principles of conflict resolution and negotiation strategies. The skills taught will enable students to accept a role in the coordination of multidisciplinary groups; investigate and solve problems; and generate solutions to inter-sectoral conflicts relevant to the coastal zones.

Introduction to Conflict Resolution; Elements of Effective Leadership; Organizational Behavior; Decision Making and Problem Solving; The Nature of Negotiations; Canadian Labour Practices

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 4109 (Coastal Economics)

This course introduces participants to the economic factors related to the management of Coastal Zones. It will look at the current problems facing these areas and policies in force to regulate and sustain development. Participants should have a general (non-specialist) understanding of the principles of economic science.

The course will make an effort to provide an updated view of the global issues of the Coastal Zone maturation and encourage a critical discussion on the present and future of coastal zone growth.

Introduction to Economics; The Nature of Economics; Economic Systems, Roles, Sectors and Functions; Market Forces and Business Concepts: Price, Utility, Production, and Costs; Natural Resource Economics; Analytical Tools and Environmental Analysis; The Development of Economics and Ecology; Problems and Principles of Ecological Economics; Policies, Institutions and Instruments; Coastal Management Decision-Making

Duration - 13 weeks

Lectures - 3 hours/week

BSMG 4110 (Environmental Policy-Water Quality)

This course is designed to give students an introduction to the issues surrounding global water management and future expectations for water and wastewater treatment. Environmental law, water guidelines for potable water and wastewater treatment nationally and internationally will be considered.

This course will explore these issues through case studies and seminars.

Resource Status; Resource Characteristics; Resource Regulation; International Efforts and Agreements; Case Studies

Lectures - 39 hours

BSMG 4111 (Fundamentals of Canadian Food Laws and Regulations)

This course is designed to examine the major topics in Canadian food laws and regulations that are fundamental in the manufacturing and trade of safe and compliant food commodities. While Canadian food laws and regulations are the primary focus of this course, pertinent international food laws and regulations will also be introduced.

Introduction to Canadian Legal System; Canadian Food Inspection Agency (CFIA); Federal Food Acts and Regulations; Other Federal Agencies; Provincial Food Laws and Regulations; US Food Laws and Regulations; International Food Laws and Regulations; Genetically Engineered (GE) Food

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

BSMG 4112 (Management Principles)

This course is designed to give participants an understanding of the current management principles and practices applicable to the industry. This course will concentrate on teaching participants how to develop organizational and planning skills and how to function as a team player.

Introduction to Management and its Evolution; Planning and Strategic Management; Decision Making; Organizational Structure; Leadership Skills; Motivating Employees; Working in Groups and Teams; Foundations of Control; Problem Solving; Adapting to Change; Practicing Interpersonal Skills

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

CHEM 1100 (Chemistry)

This is an introductory course designed to give students a knowledge and understanding of the fundamental chemical concepts which will form the basis for further studies in science and technology.

Introduction to Chemistry and Nature of Matter; Atomic Structure; Periodic Table; Chemical Bonding and Nomenclature; Stoichiometry and Chemical Reactions; Intermolecular Forces, Crystal Structure and Alloys.

On Site Sections:

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

Distance Sections:

Duration - 13 weeks

Lectures - Synchronous/Asynchronous discussion forum available throughout duration of course. Other appropriate instructional methods as required

Laboratories - 13 - 2 hour sessions

CHEM 1101 (General Chemistry I)

This is an introductory chemistry course designed to enable students to gain knowledge and understanding of the fundamental chemical concepts which will form the basis for further studies in science and technology.

Atoms and Elements; Molecules, Compounds, and Chemical Equations; Chemical Quantities and Aqueous Reactions; Periodic Properties of the Elements; Chemical Bonding I: Lewis Theory; Chemical Bonding II: Molecular Shapes

Prerequisite - High school chemistry recommended, but not essential.

Duration (DU) - 13 weeks

Lectures (LC) - 4 hours/week = 52 hours total

Laboratories (LC) - 3 hours once per week = 39 hours total

CHEM 1200 (Chemistry)

This course will develop further the fundamental concepts of chemistry, with emphasis on those relevant to the processes of chemical reaction rates and equilibrium, and to electron and proton transfer reactions. These processes will provide the basis for applications in various technologies.

Solutions and Solubility; Rates of Reaction and Chemical Equilibrium; Acids and Bases; Oxidation and Reduction Reactions; Electrochemistry

Prerequisite - CHEM 1100 (Chemistry) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

CHEM 1201 (Chemistry)

This course will develop further the fundamental concepts of chemistry, with emphasis on those relevant to the processes of chemical reaction rates and equilibrium, and electron and proton transfer reactions. These processes will provide the basis for applications in various technologies.

Liquids, Solids, and Intermolecular Forces; Solutions; Chemical Kinetics; Chemical Equilibrium; Acids and Bases; Aqueous Ionic Equilibrium; Electrochemistry

Prerequisite - CHEM 1101 (General Chemistry I)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Problem Solving Tutorial - 1 hour/week = 13 hours total

Laboratories - 3 hours/week = 39 hours total

CHEM 2101 (Environmental Chemistry)

This course is designed to provide students with the basic skills required to perform chemical analysis on environmental samples. The course will build upon knowledge obtained in basic chemistry with applications to the environmental industry.

Basic Environmental Chemistry; Chemistry of Surface and Subsurface Waters; Characteristics of Seawater; Heavy Metals, Metalloids, and Radionuclides in the Environment; Sampling and Chain of Custody

Prerequisite - CHEM 1200 (Chemistry)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CHEM 2102 (Biological Chemistry)

This is an intermediate level course designed to provide the student with the basics of organic chemistry and how it relates to biologically important substances such as lipids, carbohydrates, and amino acids and proteins.

Introduction to Organic Chemistry; Bonding and Isomerism; Alkanes and Cycloalkanes: Conformational and Geometric Isomerism; Alkenes and Alkynes; Aromatic Compounds; Stereoisomers; Alcohols, Phenols, and Thiols; Ethers; Aldehydes and Ketones; Carboxylic Acids and their Derivatives; Amines and Related Nitrogen Compounds; Carbohydrates; Amino Acids, Peptides, and Proteins

Prerequisite - CHEM 1200 (Chemistry)

Lectures - 39 hours

Laboratories - 39 hours

CHEM 2103 (Organic Chemistry)

This is an intermediate level chemistry course designed to provide the student with the basics of organic chemistry.

Introduction to Organic Chemistry; Bonding and Isomerism; Alkanes and Cycloalkanes: Conformational and Geometric Isomerism; Alkenes and Alkynes; Aromatic Compounds; Stereoisomerism; Alcohols, Phenols, and Thiols; Ethers; Aldehydes and Ketones; Carboxylic Acids and Their Derivatives; Amines and Related Nitrogen Structures

COURSE DESCRIPTIONS

Prerequisite - CHEM 1201 (General Chemistry II)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hours total

CHEM 2201 (Environmental Chemistry I)

This course is designed to provide students with the basic skills required to perform chemical analysis on environmental samples. The course will build upon knowledge obtained in general chemistry with applications to the environmental industry.

Basic Environmental Chemistry; Chemistry of Surface and Subsurface Waters; Characteristics of Seawater; Water and Wastewater Treatment; Organic Toxins and Contaminants

Prerequisite - CHEM 1201 (General Chemistry II)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hours total

CHEM 2201 (Environmental Chemistry)

This course is designed to provide students an understanding of the present day concerns in environmental chemistry. It will build upon knowledge obtained in CHEM 2101 (Environmental Chemistry (Term 3))

Water and Wastewater Treatment; Organic Chemistry; Organic Toxins and Contaminants; Toxicology and Epidemiology; Biotic and Abiotic Chemical Transformations

Prerequisites - CHEM 2101 (Environmental Chemistry)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hours total

CHEM 2300 (Environmental Chemistry II)

This is an advanced level course designed to provide knowledge in the methods and instrumental equipment used to analyze environmental samples.

Electroanalytical Techniques; Spectroscopic Methods; Separation Methods

Prerequisites - STAT 2108 (Applied Statistics) or equivalent; CHEM 2201 (Environmental Chemistry) or CHEM 2202 (Environmental Chemistry I)

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hours total

CHEM 3100 (Food Chemistry)

This is an advanced level course designed to provide the student with an understanding of the various aspects of food chemistry.

Introduction to Food Chemistry; Water; Carbohydrates; Lipids; Amino Acids, Peptides, and Proteins; Vitamins and Minerals; Food Additives; Toxic Substances; Pigments and Colourants; Characteristics of Edible Muscle Tissues

Prerequisites - FDTE 2105 (Nutrition); CHEM 2102 (Biological Chemistry) or CHEM 3102 (Biochemistry)

Lectures - 39 hours

Laboratories - 39 hours

CHEM 3101 (Food Analysis)

This is an advanced level course designed to provide the student with a detailed understanding of food analysis and how it relates to food chemistry and food technology.

Introduction to Food Analysis; Spectroscopy; Chromatography; Electrophoresis

Prerequisites - PHYS 1200 (Physics); CHEM 2102 (Biological Chemistry) or CHEM 3102 (Biochemistry)

Lectures - 39 hours

Laboratories - 39 hours

CHEM 3102 (Biochemistry)

This is an intermediate level theory course designed to familiarize the food technology student with the major aspects of biochemistry.

Introduction to Biochemistry; Enzyme Kinetics; Energy Changes and Electron Transfer in Metabolism; Carbohydrate Metabolism; The Citric Acid Cycle; Electron Transport and Oxidative Phosphorylation; Lipid Metabolism; Nitrogen Metabolism

Prerequisites - BIOL 1100 (Biology); CHEM 2103 (Organic Chemistry)

Duration - 39 hours

Lectures - 3 hours/week

CHEM 3200 (Physical Chemistry)

This theory-based course builds upon topics covered in CHEM 1101 (General Chemistry I) and CHEM 1201 (General Chemistry II). Emphasis is on physical concepts and their applications to chemical and biological systems.

States of Matter and Properties of Gases; Thermodynamics: The First Law; Thermodynamics: The Second Law; Phase Equilibria; Properties of Mixtures; Chemical Equilibria

Prerequisites - CHEM 1100 (Chemistry) or CHEM 1101 (General Chemistry I), CHEM 1200 (Chemistry) or CHEM 1201 (General Chemistry II), MATH 1101 (Calculus)

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours total

Problem Solving Tutorial - 1 hour/week = 13 hours total

CHEM 4100 (Water Chemistry)

This course is designed to give the student an understanding of the chemical composition of natural waters and the analytical methods by which these constituents are to be determined.

Criteria and Standards for Drinking Water Quality; Sampling, Quality Assurance/Quality Control; Concentration of Solutions; Characteristics of Natural Waters; Organic Compounds in Raw and Finished Waters; Disinfection Chemistry

Lectures - 39 hours

Laboratories - 39 hours

CHEM 4102 (Food Chemistry)

This is an advanced level course designed to build on knowledge so as to enhance a student's understanding of food chemistry while introducing a student to chemical concepts related to food safety.

Introduction to Food Chemistry; Reporting Results and Reliability of Analysis; Instrumentation; Naturally Occurring Food Components; Chemical Additives

Lectures - 39 hours total

Laboratory - 39 hours total

CHEM 4200 (Chemical and Analytical Methods)

This is an advanced level course designed to provide the student with a detailed understanding of the instruments and techniques involved in water analysis.

Introduction to Analytical Chemistry; Quality Assurance in Analytical Chemistry; Electroanalytical Techniques; Separation Methods; Quantitative Optical Spectroscopic Methods; Mass Spectroscopy

Prerequisite - CHEM 4100 (Water Chemistry)

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

Laboratories - 3 hours once per week = 39 total hours

CMSK 0102 (Communication Skills)

This course is designed to provide students with the various skills needed to communicate more effectively in the workplace.

Learning Strategies; Learning Strategies; Writing Skills I; Technical Reading and Writing; Technical Presentations; Employment Skills I

Duration - 13 weeks

Lectures - 3 hours/week

CMSK 0103 (Communication Skills)

This course is designed to provide vocational students with the various skills needed to communicate more effectively in the workplace.

Learning Strategies; Technical Writing; Oral Reporting; Informal Report Writing; The Job Search; Technical Correspondence

Duration - 10 weeks

Lectures - 4 hours/week for 10 weeks = 40 hours

CMSK 0202 (Communication Skills)

This course is designed to provide students with the various skills needed to communicate more effectively in the workplace.

Employment Skills II; Writing Skills II; Informal Reports; Technical Descriptions; Technical Presentations

Prerequisite - CMSK 0102 (Communication Skills)

Duration - 13 weeks

Lectures - 3 hours/week

CMSK 0203 (Communication Skills)

This course is designed to provide students with the various skills needed to communicate effectively in the workplace. Specifically, it focuses on interpersonal communication, technical writing, business correspondence, informal reports, and technical presentations.

Interpersonal Communication; Technical Writing; Business Correspondence; Informal Reports; Technical Presentations

Prerequisite - None

Duration - 13 weeks

Lectures - 3/0

CMSK 0300 (Employment Skills)

This course is designed to introduce students to the critical elements of effective job search techniques.

The Labour Market, Job Search Documents, Other Employment-related Correspondence, The Job Interview

Prerequisite - Successful completion of all term two courses

Duration - 5 weeks

Lectures - 3/0

CMSK 1100 (Introduction to Technical Reporting)

This course is designed to teach technology students the fundamentals of technical communication in both oral and written forms. Emphasis is on strategies of technical writing and presenting.

Communication Process; Technical Writing Fundamentals; Technical Abstracts; Technical Descriptions; Technical Presentations

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours

CMSK 1102 (Technical Communication I)

This course is to provide technology students with an opportunity to develop effective written and oral technical communication skills. Emphasis is on fundamentals of technical writing. Preparing for job searches and writing employment-related documents are also introduced.

Communication Process; Technical Writing Fundamentals; Technical Definitions, Descriptions and Processes; Technical Processes; Job Search

Duration - 13 weeks

Lectures - 4 hours/week

CMSK 1103 (Introduction to Technical Communications and Computer Applications)

This course is designed to teach technology students the fundamentals of technical communication and computer applications. Emphasis is on strategies of technical researching, writing, and presenting.

Introduction; Writing Skills; Software Applications; Technical Writing; Technical Abstracts; Technical Descriptions; Technical Presentations

COURSE DESCRIPTIONS

Duration - 13 weeks
Lectures - 3 hours/week
Laboratories - 1 hour/week

CMSK 1104 (Introduction to Technical Reporting)

The purpose of this course is to provide technology students with the opportunity to develop effective technical reporting skills in both oral and written forms. Emphasis is on the characteristics of technical writing and reading, research gathering and analysis, and the strategies for technical reporting and presenting.

Technical Writing and Reading Fundamentals; Research Strategies: Information Gathering, Analysis, and Documentation; Proposal Writing; Semi-Formal/Formal Technical Report Writing; Oral Technical Reporting.

Duration - 13 weeks
Lectures - 4 hours/week

CMSK 1105 (Technical Communications II)

This course provides technology students with an opportunity to develop effective written and oral technical communication skills. Emphasis is on the fundamentals of technical writing. Preparing for job searches and writing employment-related documents are also introduced.

Communication Process; Technical Writing Fundamentals; Technical Definitions, Descriptions, and Processes; Technical Presentations; Job Search

Duration - 13 weeks
Lectures - 4 hours/week = 52 hours total

CMSK 1200 (Technical Reporting)

This course is designed to help technology students apply criteria for structuring informal and formal reports. Various report formats will be examined with emphasis on research, organization, and documentation. Oral reporting techniques will be enhanced through formal technical report and persuasive presentations.

The Strategy of Technical Reporting; Informal Report Writing; Formal Report Writing; Technical Presentations; Technical Correspondence

Prerequisite - CMSK 1100 (Introduction to Technical Reporting)
Duration - 13 weeks
Lectures - 3 hours/week

CMSK 1201 (Technical Communications II)

This course is designed to hone technical writing skills, introduce fundamental research skills, develop informal and formal report writing skills, and enhance presentation techniques via a formal report presentation.

Technical Reporting Strategies; Informal Report Writing; Research Fundamentals; Semi-formal/Formal Report Writing; Formal Report Presentations

Prerequisites - CMSK 1102 (Technical Communications I)
Duration - 13 weeks
Lectures - 4 hours/week
OR
Duration - 5 weeks
Lectures - 10 hours/week

CMSK 1202 (Technical Reporting Using Computer Applications)

This course is designed to help technology students apply criteria for structuring informal and formal reports. Various report formats will be examined with emphasis on research, organization, and documentation. Oral reporting techniques will be enhanced through formal technical report and persuasive presentations.

The Strategy of Technical Reporting; Informal Report Writing; Formal Report Writing; Technical Presentations; Technical Military Correspondence; Word Processing Application

Prerequisite - CMSK 1103 (Introduction to Technical Communications and Computer Applications) or equivalent

Duration - 13 weeks
Lectures - 3 hours/week
Laboratories - 1 hour/week

CMSK 1205 (Technical Communications II)

This course is designed to hone technical writing skills, introduce fundamental research skills, develop informal and formal report writing skills, and enhance presentation techniques via a formal report presentation.

Technical Reporting Strategies; Informal Report Writing; Research Fundamentals; Semiformal/Formal Report Writing; Formal Report Presentations

Prerequisite - CMSK 1102 (Technical Communications I) or CMSK 1105 (Technical Communications I)

Duration - 13 weeks
Lectures - 4 hours/week = 52 hours

CMSK 2101 (Technical Communications III)

This course is designed to help students work well in groups, develop basic strategies for resolving conflict, and interact professionally with the media and the public.

Group Dynamics; Conflict Resolution; Meetings; Media Relations; Ethical Issues/Codes of Ethics

Prerequisite - CMSK 1102 (Technical Communications I); CMSK 1201 (Technical Communications II)

Duration - 13 weeks
Lectures - 3 hours/week = 39 hours total

CMSK 2102 (Interpersonal Communications)

The food industry operates in a people intensive environment. This course will prepare students to develop and enhance various interpersonal communications skills, positive attitude and self-confidence through effective listening, non-verbal perception skills, and information handling. Emphasis will also be given to assertiveness training, conflict resolution and handling difficult behaviour with employees and the public. Presentation skills, team building and group dynamics will form important components of this course. Emphasis in this course will be on practical application, case studies, simulation and role-playing.

Communications as Listening Skills; Information Gathering Methods and Information Management; Assertiveness Training; Oral Presentation Skills; Conflict Resolution and Handling Difficult Behaviour; Developing and Managing Teams; Customer Service

Prerequisite - CMSK 1201 (Communication at Work)

Duration - 8 weeks

Lectures - 5 hours/week

CMSK 2201 (Technical Communications IV)

This course is designed to help students structure and evaluate arguments, develop and organize a position paper for an effective debate, and organize and write a proposal.

Argument; Research Documents; Debate Position Paper; Debate; Proposal Writing;

Prerequisite - CMSK 2101 (Technical Communications III)

Duration - 13 weeks

Lectures: 2 hours/week = 26 hours

Seminar: 2 hours/week = 26 hours

CMSK 4102 (Communication Skills)

This course is designed to provide students with effective communications skills and practices to apply in their future workplaces and communities, and with direct application to other advanced diploma program modules. Emphasis will be on presentation skills, meeting management, report and proposal writing, and proficiency in the basic concepts and applications of computer and internet technology as communications tools.

Communications Process in Industry and Business; Report and Proposal Writing; Effective Oral Presentation; Group Discussions and Meeting Management Techniques; Business Letters, Office Memos, Electronic Inter-office Networks; Information Technology Applications; Employment Acquisition Strategies

Prerequisite - Restricted to student in graduate programs

Duration - 39 hours total

CNTL 2102 (Instrumentation, Controls & Automation)

This is an introduction to process instrumentation and control systems, designed to provide the students with the basics of measurement and final control elements.

Introduction to Process Control; Pressure Measurement; Signal Transmission; Level Measurement; Flow Measurement; Temperature Measurement; Final Control Elements

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

OR

Duration - 5 weeks

Lectures - 7 hours/week

Laboratories - 4 hours/week

CNTL 2105 (Electro-mechanical Logic)

This course introduces the student to the general concepts and programming techniques associated with programmable controllers. Specific training will be provided on the OMRON C20K family of programmable controllers, along with the Sysmate Ladder Support Software. Special emphasis on Fluids Control.

Electro-mechanical/Electronics Devices; Programmable Controllers (PC's); The Memory Map; The Ladder Diagram; Operating a Programmable Controller; Discrete Input and Output Operations; Timers; Counters; Auxiliary Commands and Functions; Arithmetic Functions; Program Control; Bit Manipulation; Sequencers; Analog Operations, with special emphasis on Fluids Control

Prerequisites - CNTL 2102 (Instrumentation, Controls & Automation); ELTR 1101 (Electronics for Instrumentation)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

CNTL 2108 (Control Devices and Basic Control Theory)

This course is designed as an introduction to thyristors and basic control theory. It will provide the student with the basic design and operation of Silicon Controlled Rectifiers, common breakover devices, other common thyristors, and the basics of process control.

Silicon Controlled Rectifier; Breakover Devices; Other Thyristors; Transducers and Sensors; Process Control Theory

Co-requisite - ELTR 1102

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/week

CNTL 2110 (Instrumentation, Controls and Automation)

This is an introduction to process instrumentation and control systems, designed to provide the students with the basics of measurement and final control elements.

Introduction to Process Control; Pressure Measurement; Signal Transmission; Level Measurement; Flow Measurement; Temperature Measurement; Final Control Elements

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 5 weeks

Lectures - 7 hours/week = 35 hours total

Laboratories - 4 hours/week = 28 hours total

CNTL 2111 (AC Motor Controls)

This is an advanced level course designed to introduce the student to relay control systems, AC motor controllers and variable speed AC motor drives. Upon successful completion, the student should be able to design and analyze typical relay control systems. Also the student should be able to analyze typical motor controllers and variable speed drives used with three-phase alternating current motors.

COURSE DESCRIPTIONS

Relay Control Systems; AC Full Voltage Starters; AC Reduced Voltage Starters; Multi-Speed Controllers; Wound Rotor Motor Controllers; Synchronous Motor Controllers; Alternating Current Drives.

Prerequisites - ELTK 1303 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CNTL 2202 (Instrumentation, Controls and Automation)

This is an introduction to process control systems, designed to provide the students with the basics of PID Control as well as an overview or more advanced systems.

PID Control; Advanced Control Techniques; Digital Control Systems; Steam Plant Control; Steam Turbine Control; Diesel Plant Control; H.V.A.C. Control; Chiller/Boiler/Distribution System Control.

Prerequisite - CNTL 2102 (Instrumentation, Controls & Automation)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CNTL 2203 (Controls)

This course is intended to show the application of classical control theory to industrial control systems, including Bode Analysis. Control system components will be studied in theory and in the laboratory.

Modes of Control; Measurement Devices; Operational Amplifier Circuits; Bode Analysis

Prerequisite - CNTL 2108 (Control Devices & Basic Control Theory) or CNTL 2109 (Control Devices)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

CNTL 2204 (Controls)

This is an introduction to process instrumentation and controls systems, designed to provide the students with the basics of measurement, final control elements and advanced control systems.

Review of Process Control; Pressure Measurement; Signal Transmission; Level Measurement; Flow Measurement; Final Control Elements; Advanced Control Techniques

Prerequisite - CNTL 2108 (Control Devices & Basic Control Theory) or CNTL 2109 (Control Devices)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

CNTL 2205 (Instrumentation, Controls and Automation)

This is an introduction to process control systems, designed to provide the students with the basics of PID Control as well as an overview or more advanced systems.

PID Control; Advanced Control Techniques; Digital Control Systems; Steam Plant Control; Steam Turbine Control; Diesel Plant Control; H.V.A.C. Control; Chiller/Boiler/Distribution System Control.

Prerequisites - CNTL 2110 (Instrumentation, Control and Automation)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 4 hours/week every second week = 24 hours total

CNTL 2206 (Instrumentation, Controls and Automation)

This is an introduction to process instrumentation and control systems, designed to provide the students with the concept of process measurement and control.

Introduction to Process Control; Pressure Measurement; Signal Transmission; Level Measurement; Flow Measurement; Temperature Measurement

Prerequisites - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CNTL 2207 (Programmable Logic Controllers – PLCs)

This course introduces the student to the general concepts of industrial control solutions and programming techniques associated with programmable logic controllers. The student will have the opportunity to apply their abilities and develop troubleshooting skills through practical laboratory sessions on a particular PLC. Currently, specific training can be provided on SIEMENS Simatic S7-300 programmable logic controllers, along with the Step 7 Simatic software.

Introduction to Programmable Controllers (PCs) or Programmable Logic Controllers (PLCs); System Description; The Memory Map; Operation of a Programmable Logic Controller; The Ladder Diagram; Programming a PLC; Timers; Counters; Arithmetic Functions

Prerequisites - ELTR 2102 (Digital Logic); CNTL 2111 (AC Motor Controls)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CNTL 2302 (Instrumentation, Controls and Automation)

This is an introduction to process instrumentation and controls systems, designed to provide the students with the basics of measurement and final control elements and process control.

Introduction to Process Control; Pressure Measurement; Signal Transmission; Level Measurement; Flow Measurement; Temperature Measurement; Final Control Elements; PID Control; Advanced Control Techniques; Digital Control Systems

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

CNTL 3105 (Instrumentation, Controls and Automation)

This is an introduction to process control systems, designed to provide the students with the basics of PID Control as well as an overview on more advanced systems.

PID Control; Advanced Control Techniques; Digital Control Systems; Final Control Elements; Analysis Instrumentation.

Prerequisites - CNTL 2206 (Instrumentation, Controls and Automation)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 4 hours/week x 10 labs = 40 hours total

CNTL 3201 (Advanced Programmable Logic Controllers - PLCs)

This course extends the student's understanding of concepts of industrial control solutions and programming techniques associated with programmable logic controllers, including various hardware and software upgrades. The student will have the opportunity to apply their abilities and develop troubleshooting skills through practical laboratory sessions with a typical programmable logic controller, human machine interface terminal, and variable frequency drive.

Program Control; Bit Manipulation; Sequencers; Analog Operations; PID Control; Human Machine Interface (HMI); AND Frequency Drives

Prerequisite - CNTL 2207 (Programmable Logic Controllers – PLCs)

Duration - 13 weeks

Lectures - 3 hours/week x 13 weeks = 39 hours total

Laboratories - 3 hours/week x 10 weeks = 30 hours total

CNTL 3400 (Advanced Controls)

The purpose of this course is to provide the student with an exposure to advanced control topics and advanced process control systems, with particular attention paid to control topics found in the marine, and oil and gas sectors.

Smart Transmitters; Annunciators, Alarms, and Displays; Batch Control; Distillation Controls; Other Advanced Controls.

Prerequisites - CNTL 3105 (Instrumentation, Controls and Automation)

Duration - 13 weeks

Lectures - 3 hours/week (39 hours total)

Laboratories - 2 hours/week (26 hours total)

CPSK 0100 (Introduction to Computers)

This course is designed to introduce students to computer systems. Particular emphasis is placed on the use of word processing, spreadsheets, e-mail and the internet and security issues.

Computer Fundamentals; Word-processing Software Applications; Spreadsheet Software Applications; Electronic Research.

Prerequisite - None

Duration - 13 weeks

Lectures/Laboratories - 2 hours/week + 26 hours total (0/2)

CPSK 1100 (Computer Applications)

This course is designed to introduce students to the use of computers as communication and learning tools.

Computer Fundamentals; Word-processing Software Applications; Electronic Research and Communication; Presentation Software Applications; Spreadsheet Software Applications

Duration - 13 weeks

Lectures/Laboratories - 5 hours/week

CPSK 1101 (Computer Operations)

This course is designed to introduce the student to the various personal computer operating systems including MS DOS 6.22, Red Hat Linux, and Windows 2000.

Introduction to Operating Systems; Introduction to Linux; Introduction to Windows 2000

Duration - 13 weeks

Lectures/Lab - 0/4 hours/week

CPSK 1102 (Introduction to Applied Programming)

This course provides the student with an introduction to the concepts of problem solving using computer programming techniques. The course will be taught using a high level language such as C++ or C#.

Computer Fundamentals; Program Design; C++/C# Fundamentals; Expressions and Interactivity; Decision Statements; Looping Statements; Functions; Arrays; Advanced File Operations; Pointers.

Duration - 13 Weeks

Laboratories - 2 hours twice per week = 52 total hours

COURSE DESCRIPTIONS

CPSK 1103 (Computer Database and Spreadsheet Applications)

This course will advance the concept of the computer as a personal productivity tool. Emphasis will be placed on the analysis of spreadsheet data and graphs, understanding of database functions and the integration of software packages with reference to relevant studies.

Computer Fundamentals; Presentation and Word-processing Software Applications; Intermediate and Advanced Spreadsheet Software Applications; Database Software Applications; Software Integration

Prerequisite - None

Duration - 13 weeks (65 hours total)

Lectures - 1 hour/week

Laboratories - 4 hours/week (two 2-hour labs/week)

CPSK 1300 (Computer Skills)

This course is designed to introduce students to the use of computers as communication and learning tools.

Computer Fundamentals; Word-processing Software Applications; Presentation Software Applications; Spreadsheet Software Applications

Prerequisite - None

Duration - 5 weeks

Lectures - 0 hours/week = 0 hours total

Laboratories - 8 hours/week = 40 hours total

CPSK 2102 (Intermediate Computer Applications)

This course will advance the concept of the computer as a personal productivity tool. Emphasis will be on the creation of web pages, analysis of spreadsheet data and graphs, understanding of database functions and the integration of software packages with reference to relevant studies.

Web Page Design; Advanced Spreadsheet Software Applications; Database Software Applications; Software Integration.

Prerequisite - CPSK 1100 (Computer Applications)

Duration - 13 weeks

Lectures - 5 hours/week

ELTK 0102 (Electrotechnology)

This is an introductory course in electrical practice covering the concepts of electricity, circuit analysis, switchboards, wiring and cabling, and navigation lights.

Safety Precautions; The Electric Circuit; Ohm's Law and The Power Law; Cells and Batteries; Electrical Measuring Instruments; Conductor Types and Sizes; Switchboards; Wiring Cabling and Distribution; Navigation Lights

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week (1 Lab every two weeks)

ELTK 0200 (Electrotechnology)

This course further deals with safety in the marine environment, the development of skills required in the use of test equipment, marine electrical maintenance, troubleshooting procedures, paralleling a.c. and d.c. generators, and the maintenance of a.c. and d.c. motors

Safe Workshop Techniques; Magnets and Magnetism; DC Generators; AC Generators; AC Motors; DC Motors; Maintenance Procedures; and Troubleshooting

Prerequisite - ELTK 0102 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 2 hours/week (1 Lab every two weeks)

ELTK 1100 (Electrotechnology)

This is an introductory course in electrical theory covering the basic concepts of electricity, circuit analysis and magnetism. The laboratory work is designed to develop skills in the construction of electrical circuits, use of electrical measuring instruments and reinforce theoretical concepts.

Introduction to Electricity; Ohm's Law and Electric Circuits; Network Theory; Magnetism and Electromagnetism; Electrical Measurement; Inductance; Cells and Batteries

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 1101 (Electrotechnology)

This is an introductory course in electrical theory covering the basic concepts of electricity, resistive circuit analysis, network analysis and magnetism. The laboratory work is designed to develop skills in the construction of electrical circuits, use of electrical measuring instruments and reinforce theoretical concepts.

Introduction to Electricity; Ohm's Law and Electric Units; Network Theory; Magnetism and Electromagnetism; Cells and Batteries

Prerequisite - Introduction to Math 1000 or appropriate level of mathematics skills demonstrated on a mathematics placement test.

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/week

ELTK 1102 (Electrotechnology)

This is an introductory course in electrical theory covering the basic concepts of electricity, circuit analysis and magnetism. The laboratory work is designed to develop skills in the construction of electrical circuits, use of electrical measuring instruments and reinforce theoretical concepts.

Introduction to Electricity; Ohm's Law and Electric Circuits; Network Theory; Magnetism and Electromagnetism; Electrical Measurement; Inductance; Cells and Batteries

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 1200 (Electrotechnology)

This course covers the basics of A.C. theory and its application to solve circuits containing resistance, capacitance and inductance. An introduction to transformers and polyphase A.C. circuits is also included.

Basic A.C. Theory; Inductance in A.C. Circuits; Capacitance and its Effect in A.C. Circuits; Resonance; Introduction to Transformers; Introduction to Polyphase A.C.

Prerequisite - ELTK 1100 (Electrotechnology) or ELTK 1102 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTK 1201 (Electrotechnology)

This course is a continuation of the electrotechnology course taken in the first semester. It covers the basics of A.C. Theory and the application of this to solve circuits containing resistance, capacitance and inductance. An introduction to transformers and polyphase A.C. Circuits is also included.

Basic A.C. Theory; Inductance; Capacitance; Parallel and Series Parallel A.C. Circuits; Resonance; Introduction to Transformers; Introduction to Polyphase A.C.

Prerequisite - ELTK 1101 (Electrotechnology)

Duration - 13 weeks

Lectures - 5 hours/week

Laboratories - 2 hours/week

ELTK 1202 (Electrotechnology)

This course covers the basics of A.C. theory and its application to solve circuits containing resistance, capacitance and inductance. An introduction to transformers and polyphase A.C. circuits is also included.

Basic A.C. Theory; Inductance in A.C. Circuits; Capacitance and its Effect in A.C. Circuits.; Resonance; Introduction to Transformers; Introduction to Polyphase A.C.

Prerequisite - ELTK 1102 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 1203 (Basic Electrical Technology)

This is an introductory course in electrical theory covering the basic concepts of electricity, circuit analysis, magnetism, resistance, capacitance, inductance, motors, generators, transformers, and protective devices. The laboratory work is designed to develop skills in the construction of basic electrical circuits and the use of electrical measuring instruments. It will also reinforce theoretical concepts.

Electrical Principles; Electric Circuits; Electrical Safety; Magnetism; Inductance; Cells and Batteries; A.C. Theory; Inductance in A.C. Circuits; Capacitance in A.C. Circuits; and Distribution and Protection Devices

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 1301 (Electrotechnology)

This is a basic electrotechnology course designed to give the Marine Engineering student practical electrical experience.

Marine Safety; Marine Cabling and Glanding; Fuses and Breakers; Single and Three Phase Wiring; Multi-Meters and Meggas; Batteries; Electrical Panels; Gauges and Sensors; Starting Motors and Alternators; A.C. and D.C. Motors and Generators; Internal Communications

Prerequisite - ELTK 1100 (Electrotechnology)

Duration - 5 weeks

Lectures - 2 hours/week

Laboratories - 6 hours/week (2 labs - 3 hours each)

ELTK 1303 (Electrical Machines and Power Systems)

This is an intermediate level course in electrical machine theory and marine power systems. It covers basic DC and AC machine theory and introduces the student to the safe operation of electric systems and machines. As well, the structure and protection of marine power systems is covered.

DC Machines; AC Machines; Marine Electrical Power Systems

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 5 weeks

Lectures - 8 hours/week = 40 hours total

Labs - 4 hours/week = 20 hours total

ELTK 2102 (Marine Electric Systems)

This is an intermediate course in ships electrical systems.

Ships Electrical Systems (General); Small Ship System; Large Ship System; Electrical Propulsion; Automation

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 5 hours/week

ELTK 2103 (Electrotechnology)

This is an intermediate level course designed to introduce students to the safe operation of electric systems and machines.

DC Machines; AC Machines; Marine Electrical Power Systems

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTK 2104 (Electrotechnology)

This is an introductory course in ship electrical systems.

Ship Electrical System; Small Ship System; Large Ship System

Prerequisite - ELTK 1200 (Electrotechnology)

Duration - 5 weeks

Lectures - 7 hours/week

COURSE DESCRIPTIONS

ELTK 2106 (Electrotechnology)

This is an introductory course in electrical machine theory. It covers the basics of DC machines and transformers and provides students with a background in electrical machines. It will give students an appreciation of rotating machinery and an idea of the type and operating characteristics of various DC machines. The course will expand students' knowledge of transformers and their applications, as well as enhance their ability to analyze electric circuits. The laboratory work is included to reinforce theoretical concepts and to enhance skills in the use of measuring instruments.

DC Machine Construction; DC Generators; DC Motors; Single-phase Transformers; Special Transformers

Prerequisite - ELTK 1200 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTK 2107 (Electrotechnology)

This course is an introductory course in electrical machine theory. It covers the basics of A.C. and D.C. machine theory and provides the necessary background for subsequent courses in electrical machines. It also provides the students with an understanding of various types of controls devices for A.C. and D.C. machines.

D.C. Machines; A.C. Machines; Synchro mechanisms and Servomechanisms; Final Correcting Devices and Amplifiers; Input Transducers - Measuring Devices; Typical Industrial Systems

Prerequisite - ELTK 1201 (Electrotechnology) or ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/week

ELTK 2108 (Electrotechnology)

This course is an introductory course in electrical machine theory. It covers the basics of A.C. and D.C. machine theory and provides the necessary background for subsequent courses in electrical machines. It also provides the students with an understanding of various types of switches used with A.C. and D.C. machines.

D.C. Machines; A.C. Machines; Mechanical and Electro-mechanical Switches

Prerequisite - ELTK 1201 (Electrotechnology) or ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/week

ELTK 2111 (Marine Electrical Equipment)

This is a basic electrotechnology course designed to give the Marine Engineering student practical electrical experience.

Marine Safety; Meters and Meggers; Electrical Panels; Control Devices; Protection Equipment; Marine Cabling and Glanding; Single and Three-phase Wiring; Distribution Schemes; Earth/Ground Fault Detection Systems; Batteries; Motors and

Generators; Internal Communications

Prerequisite - ELTK 1100 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 2 hours/week

Laboratory - 3 hours/week

ELTK 2118 (High Voltage Safety)

This course is designed to familiarize students with regulations and safety practices related to the operation, maintenance and repair of Remote Operated Vehicles (ROVs). Applicable laws and standards relevant to medium and high voltage safety, as well as, the associated protective equipment required will be addressed. Proper work procedures to be followed when carrying out maintenance and repair of ROVs will be discussed.

Legislation; Internal Controls; Personal Protective Equipment (PPE); Documentation; Marine Electrical Systems; Risk Management; Preparing the Work Site; Work Team Preparedness and Orientation; Materials and Equipment; Emergency Response Planning; Commissioning

Prerequisites - ELTK 1200 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 20 hours total (10 Labs)

ELTK 2119 (Marine Electrical Systems)

This course gives students knowledge and skills in basic shipboard rotating electrical equipment, auxiliary power distribution systems, electrical fault protection and safe electrical usage.

Electrical Safety; Meters and Meggers; Fuses and Molded Case Circuit Breakers; Single and Three Phase Wiring; Introduction to Generators and Motors; DC Generators and DC Motors; AC Generators (Alternators) and AC Motors; Control Devices; Distribution Systems

Prerequisites - ELTK 1202 (Electrotechnology)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 2200 (Marine Electrical Troubleshooting)

This is an electrotechnology course designed to give the ROV student practical experience in electrical troubleshooting. The course requires students to apply structured problem-solving strategies to identify and resolve problems with ROV electrical.

Meters and Meggers plus Instrumentation; Electrical Panels; Control Devices; Protection Equipment; Marine Cabling and Glanding; Single and Three-phase Wiring; Motors and Generators (ROV, AC in particular); Structured Problem Solving; Power Supplies; Tracing Analog Signals

Prerequisites - ELTK 2116 (Industrial Electronics and Controls)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

ELTK 3101 (Electrotechnology)

This is an advanced level course which covers topics in AC machines. The course is designed to provide the student with the necessary background information concerning the types characteristics, and applications of AC machines.

Three-phase Transformers; Three-Phase Induction Motors; Three-phase Synchronous Motors; Motor Branch Circuit and Enclosures; Alternators; Single-phase Induction Motors

Prerequisite - ELTK 2106 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTK 3104 (Electrotechnology)

This course is intended to upgrade non electrical students to enable them to complete subsequent electronic courses in the ROV program.

Review of Basic Electrical Concepts; Ohm's Law and Electric Circuits; Semiconductor Diodes Bipolar Junction Transistors; Silicon Controlled Rectifier; Other Thyristors; Operational Amplifier Circuits.

Duration - 3 weeks

Lectures - 9 hours/week = 27 hours total

Laboratories - 4 hours/week (6 Labs) = 12 hours total

ELTK 3105 (High Voltage Safety)

This course is designed to familiarize students with regulations and safety practices related to the operation, maintenance and repair of Remote Operated Vehicles (ROVs). Applicable laws and standards relevant to medium and high voltage safety, as well as, the associated protective equipment required will be addressed. Proper work procedures to be followed when carrying out maintenance and repair of ROVs will be discussed.

Legislation; Internal Controls; Documentation; Personal Protective Equipment (PPE); Materials and Equipment; Marine Electrical Systems; Preparing the Work Site and Work Space; Work Team Preparedness and Orientation; Emergency Response Planning; Risk Management; Commissioning

Prerequisites - ELTK 1200(Electrotechnology) or equivalent

Duration - 10 weeks

Lectures - 4 hours/week = 40 hours total

Laboratories - 3 hours/week = 30 hours total

ELTK 3106 (Marine Electrical Troubleshooting)

This is an electrotechnology course designed to give the ROV student practical experience in electrical troubleshooting. The course requires students to apply structured problem-solving strategies to identify and resolve problems with ROV electrical.

Meters and Meggers plus Instrumentation; Electrical Panels; Controls Devices; Protection Equipment; Marine Cabling and Glanding; Single and Three-phase Wiring; Motors and Generators (ROV, AC in particular); Structured Problem Solving; Power Supplies; Tracing Analog Signals

Prerequisite - ELTR 3118 (Industrial Electronics and Controls)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

ELTK 3202 (DC Machines and Transformers)

This course in electrical machine theory covers the basics of DC machines and transformers, provides the necessary background in electrical machines, gives an appreciation of rotating machinery, and describes the type and operating characteristics of various DC machines. It also addresses transformers and their applications, electric circuit analysis, and includes laboratory work to reinforce theoretical concepts and enhance student skills in the use of measuring instruments.

DC Machine Construction; DC Generators; DC Motors; Single-Phase Transformers; Three-Phase Transformers; Special Transformers

Prerequisite - ELTK 1200 (Electrotechnology); ELTK 2111 (Marine Electrical Equipment)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 3203 (Rotating AC Machines)

This is an advanced level course designed to provide the student with the necessary background concerning the types, characteristics, and applications of AC machines common to the marine environment.

Three-phase Induction Motors; Three-phase Synchronous Motors; Motor Branch Circuits and Enclosures; AC Propulsion Systems; Alternators; Single-Phase Induction Motors; Marine Electrical Power Systems

Prerequisite - ELTK 1200 (Electrotechnology); ELTK 2111 (Marine Electrical Equipment)

Duration - 13 weeks instruction

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTK 3300 (Marine Electrical Knowledge)

This electrotechnology course is designed to give the Ocean Technology student a basic understanding of marine electrical systems.

Metering; Electrical Maintenance; Electrical Panels; Protection Equipment; Backup Power Supplies; Auxiliary Electrical Systems; Internal Communications

Prerequisite - CNTL 2111 (AC Motor Controls)

Duration - 5 weeks

Lectures - 7 hours/week

COURSE DESCRIPTIONS

ELTK 3301 (Marine Electrical Safety & Standards)

The purpose of this course is to provide the student with an exposure and basic understanding of electrical safety and standards practices for the installation and maintenance of electrical equipment in the marine industry.

Introduction to Safety and Standards; Grounding and Bonding; Conductor Ampacity and Marine Cables; Power Distribution and Panels; Ship Electrical Equipment; Marine Electrical Safety.

Prerequisites - CNTL 2111 (AC Motor Controls)

Duration - 5 weeks

Lectures - 7 hours/week = 35 hours total

Laboratories - 6 hours/week (labs and industrial visits) = 30 hours total

ELTK 3500 (Marine Cabling Installations)

This course is intended to provide the student with the knowledge and skills necessary to select, install, and terminate cables for on deck and subsea installations in a marine environment. It will involve application considerations for construction and selection of marine cables and connections, on deck electrical installations and hazardous area considerations, and sonar, data collection and Remote Operated Vehicle considerations.

Marine Cable Construction; Submersed Data collection system and ROV cable considerations; Explosion protection for Electrical/Instrumentation installations (oil and gas); Connectors and Terminations (on deck); Connectors and Terminations (submersed); Splicing and Potting (submersed); Underwater Equipment Terminations (mechanical)

Prerequisite - ELTR 2113 (Fiber Optics)

Duration - 5 weeks

Lectures - 4 hours/week = 20 hours total

Laboratories - 4 hours twice a week = 40 hours total

ELTR 1101 (Electronics for Instrumentation)

This is an introductory electronics course intended to introduce students to the electronics circuitry used in instrumentation. This course provides the necessary prerequisite electronics for subsequent coursing in marine engineering process control and instrumentation.

Semiconductor Devices; Integrated Circuits; Transistor Switching Circuits, and Microprocessors/Computers/PLCs as Control Devices

Prerequisite - ELTK 1100 (Electrotechnology); ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTR 1102 (Basic Electronic Devices)

This course will include the description, operation and application of simple electronic components with particular emphasis on semiconductor theory. Analysis techniques involving diode equivalent circuits will be introduced and expanded to bipolar transistor D.C. Biasing

Semiconductors; Diode Applications; Bipolar Junction Transistors

Prerequisite - for Electro- Mechanical and Electronics Engineering Technician Students: ELTK 1101 (Electrotechnology)

for Bachelor of Technology (Ocean Instrumentation) students: ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week x 11 weeks = 22 hours total

ELTR 1103 (Electronic Fabrication Techniques)

This a practical electrical/electronic course which enables the student to obtain practical knowledge in soldering, wire wrapping, cable formation and test lead fabrication; it also equips the student to insert and extract electronic components from printed circuit boards and make repairs to damaged traces on a PCB. In addition, the student gains knowledge in electrical and hazardous material safety, proper use and care of hand tools, proper use and care of equipment, and hazards and prevention of ESD.

General Workshop Safety Procedures; Basic Handtools Used in Electronic Repair and Fabrication; Soldering and Desoldering Techniques; Circuit Wiring Techniques; Cable Formation and Connectors; Schematic Diagrams and Component Identification; Care and Use of Basic Test Equipment

Prerequisite - for Bachelor of Technology (Ocean Instrumentation) students: ELTK 1200 (Electrotechnology)

Co-Requisite - for Electro-mechanical Technician and Electronics Engineering Technician students: ELTK 1101 (Electrotechnology)

Duration - 52 hours

Lectures - 13 hours

Laboratories - 39 hours

ELTR 1104 (Electronic Fabrication Techniques)

This a practical electrical/electronic course which enables the student to obtain practical knowledge in soldering, wire wrapping, cable formation and test lead fabrication; it also equips the student to insert and extract electronic components from printed circuit boards and make repairs to damaged traces on a PCB. In addition, the student gains knowledge in electrical and hazardous material safety, proper use and care of hand tools, hazards and prevention of ESD and surface mounting components.

General Workshop Safety Procedures; Basic Handtools Used in Electronic Repair and Fabrication; Soldering and Desoldering Techniques; Circuit Wiring Techniques; Cable Formation and Connectors; Schematic Diagrams and Component Identification; Surface Mount Components

Duration - 5 weeks

Lectures - 3 hours/week = 15 hours total

Laboratories - 2 hours four times per week = 40 total hours

ELTR 1301 (Control Electronics for ROV)

The course will include the description, operation and application of simple electronic components with particular emphasis on semiconductor theory. Analysis techniques involving diode equivalent circuits will be introduced and expanded to bipolar junction transistors, field-effect transistors and power control devices.

Semiconductor Diodes; Bipolar Junction Transistors; Field-Effect Transistors; Thyristors

Prerequisite - ELTK 1100 (Electrotechnology)

Co-requisite - ELTK 1200 (Electrotechnology)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week x 11 weeks = 22 hours total

ELTR 2102 (Digital Logic)

This course introduces students to the field of digital electronics. They will be taught design and diagnosis techniques applicable to digital electronics.

Introduction to Digital Circuits; Combinatorial Logic; Logic Families; Programmable Logic Arrays; Sequential Logic

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 lab @ 2 hours/week

ELTR 2107 (Electronic Troubleshooting)

This course requires students to apply structured problem-solving strategies to typical electronics equipment repairs.

Structured Problem Solving; Technical Documentation; Power Supplies; Tracing Analog Signals; Audio Frequency Systems; Radio Frequency Systems

Prerequisite - ELTR 1102 (Basic Electronic Devices);

ELTR 1103 (Electronic Fabrication Techniques)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 4 hours/ week (2 labs @ 2 hours per week)

ELTR 2110 (Analog Communications)

This is an intermediate level electronics course designed to provide students with an introduction to the area of analog communications.

Introduction to Analog Communications; Amplitude Modulation and AM Systems; Single-Sideband Techniques; Frequency and Phase Modulation; Matching Circuits; Noise

Co-requisites - ELTR 1102 (Basic Electronic Devices);

MATH 1103 (Introduction to Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 lab @ 3 hours/week

ELTR 2113 (Fiber Optics and Network Cabling)

This fiber optics communications course emphasizes the practical application of fiber to the design and construction of communication systems and networks. The approach will give the student a hands-on, practical understanding of cable handling, terminating, splicing, testing with optical sources, and power meters; as well, the student will learn about twisted pair and coaxial network cabling.

Introduction to Fiber Optics; Optical Fibers; Optical Fiber Connections and Accessories; Fiber Optic Systems and Components; Fiber Installation; Termination and Testing; Network Cables

Prerequisites - ELTR 1103 (Electronic Fabrication Techniques)

OR ELTR 1104 (Electronic Fabrication Techniques)

Duration - 13 weeks

Lectures - 1 hour/week (13 hours total)

Laboratories - 2 hours once/week (26 hours total)

OR

Duration - 5 weeks

Lectures - 2 hours/week (10 hours total)

Laboratories - 3 hour lab twice/week (30 hours total)

ELTR 2114 (Electromagnetic Radiation)

This course is designed to give naval students basic knowledge of radiation hazards onboard the Department of National Defense vessels. This course covers solutions to common radiation hazards and standardized tests for radiation hazards on naval vessels.

Introduction to the Shipboard Electromagnetic Environment; EMI and EM Fields; Shipboard Antennas and Radar; Shipboard EMI Sources; Shields, Enclosures, and Apertures; Cables and Transmission Lines; Grounds and Bonds; Radiation Hazards; EME Inspections and Testing

Prerequisite - ELTK 1101

Duration - 13 weeks instruction

Lectures - 2 hours/week = 26 hours total

Laboratories - 1 hour/week = 13 hours total

ELTR 2115 (Data Communications)

This Data Communications course provides a comprehensive data communications background to ROV candidates. The course starts off with an introduction to analog communications providing a background in amplitude modulation and frequency modulation principles including single-sideband techniques. Then the student is introduced to transmission mediums, protocols and characteristics. This is followed by digital communications systems, data transfer and emphasizes the practical application of fibre in the design and construction of communication systems and networks required for ROV operations. The approach will give the student the required communications background and a hands-on, practical understanding of cable handling, terminating, splicing, testing with optical sources, and power meters.

Introduction to Analog Communications; Amplitude Modulation and AM Systems; Single-Sideband Techniques; Frequency and Phase Modulation; Transmission Mediums and Protocols; Transmission Characteristics; Digital Communications Systems; Data Transfer; Fibre Optics.

Corequisite - ELTK 1200 (Electrotechnology) or equivalent

Duration - 13 weeks

Lectures - 3 hour/week

Laboratories - 2 hours/week

ELTR 2116 (Industrial Electronics & Controls)

This course is designed to enable students to understand power supplies, electrical motors and their electronic controllers in ROV applications.

Switched Mode Power Supplies (SMPS); Electrical Machines; Power Electronics; Electronic Controllers for Electrical Drives in ROV.

COURSE DESCRIPTIONS

Prerequisites - ELTR 1301 (Introduction to Electronic Devices)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ELTR 2117 (Microcomputer Interfacing I)

This course provides the student with knowledge of the software and hardware associated with a microprocessor system and its basic interfacing requirements.

Microprocessor Systems; C++ Language Basics; 8086/88 Microprocessor and Supporting Chips; Memory Systems; Input/Output and Communications; Shielding, Grounding and Transmission Line Techniques; Interfacing Basics and Special Applications (Laboratory Objective)

Prerequisite - ELTR 2102 (Digital Logic)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 3 hours/ week

ELTR 2118 (Introduction to Computers and Networking)

This course is an introduction to computer systems and networking.

Computer Systems; Network Environment; Network Routing; Network Management; Network Security

Prerequisite - CPSK 1102 (Introduction to Programming)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours

Laboratories - 2 hours/ week = 26 hours

ELTR 2202 (Analog Transistor Circuits)

This course involves the application of linear circuit theory to transistor circuits. The student will be introduced to linear models of discrete transistors and will learn how to use them to build up Generalized Amplifier modes of complete amplifier systems.

Transistor DC Biasing; Small Signal Models; Small Signal Analysis; Multistage Amplifiers; Power Amplifiers; Frequency Response

Prerequisite - ELTR 1102 (Basic Electronic Devices) or ELTR 1301 (Introduction to Electronic Devices); ELTK 1200 (Electrotechnology) or ELTK 1201(Electrotechnology)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 13 labs @ 3 hours per week

ELTR 2213 (Control Devices and Operational Amplifiers)

This course is designed as an introduction to thyristors and operational amplifiers. It will provide the student with the basic design and operation of Silicon Controlled Rectifiers, common breakover devices, other common thyristors, common operational amplifier circuits used in industrial controls, and the design of active filters.

Silicon Controlled Rectifier, Breakover Devices, Other Thyristors, Operational Amplifier Circuits, Active Filters

Prerequisites - ELTR 1102 (Basic Electronic Devices)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

ELTR 2214 (Microcomputer Interfacing)

This course provides the student with knowledge of the software and hardware associated with a microprocessor system and its basic interfacing requirements.

Microprocessor Systems; Advanced C++; Intel Microprocessors and Supporting Chips; Memory Systems; Input/Output and Communications; Shielding, Grounding and Transmission Line Techniques; Interfacing Basics and Special Applications (Laboratory Objective)

Prerequisite - CPSK 1102 (Introduction to Applied Programming); ELTR 2102 (Digital Logic); ELTK 1303 (Electrical Machines and Power Systems); ELTR 1103 (Fabrication Techniques)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 3 hours/week = 39 hours

ELTR 3100 (Analog Integrated Circuits)

The purpose of this course is to provide the student with an understanding of the theory relating to differential and operational amplifiers, analog filters and signal generators. The theory covered in class will be applied and validated during the laboratory periods.

The Design of an Operational Amplifier; Operational Amplifier Characteristics; Linear Applications; Active Filters; Non-Linear Applications

Prerequisite - ELTR 2202 (Analog Transistor Circuits)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 lab @ 3 hours/week

ELTR 3104 (Digital Signal Processing)

This course introduces the student to digital signal processing concepts.

Introduction to Digital Signal Processing; Signal Analysis; Digital Signal Processing; Digital Filters; Data Compression; Naval Applications of DSP

Prerequisite - MATH 1103 (Introduction to Calculus) or MATH 1101 (Introduction to Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week x 10 weeks

ELTR 3105 (Pulse and Switching Circuits)

This course will expose students to circuits used in pulse and switching applications. Analysis and design of the circuits will be emphasized along with the idea of utilizing such circuits as building blocks to larger scale digital circuits.

Pulse Fundamentals; RC Circuits; Switching Circuits; Active Filtering Circuits (Using Op-Amps); Applications

Prerequisites -CNTL 2108 (Control Devices & Basic Control Theory) or CNTL 2109 (Control Devices);
MATH 1103 (Introduction to Calculus)
Co-requisite - ELTR 2202 (Analog Transistor Circuits)

Duration - 13 weeks

Lectures - 5 hours/week * 13 weeks

Laboratories - 3 hours/week * 10 weeks

ELTR 3108 (Microcomputer Interfacing)

This course provides the student with the knowledge of the hardware associated with a microprocessor system and the interfacing requirements for communication with the environment.

Microprocessor Systems; Memory Systems; Digital Input/Output; Analog Input/Output; Specific Applications; Microprocessor System Support Circuits; Buses; Testing and Troubleshooting

Corequisite - CPSK 1101 (C-Language Programming) for Electronics Engineering Technician and Electro-Mechanical Technician Students only; ELTR 2102 (Digital Logic)

Duration - 13 weeks

Lectures - 6 hours/week

Laboratories - 3 hours/week

ELTR 3109 (Introduction to Networks)

This introductory course in local, metropolitan and wide area networks covers the various levels of network protocol, from the lowest hardware levels to the highest application protocols.

Introduction to Networks; Physical Layer; Data Link Layer; Medium Access Control Layer; Network Layer; Transport Layer; Application Layer; Network Security

Prerequisite - ELTR 3108 (Microcomputer Interfacing)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 3 hours/week = 39 hours total

ELTR 3114 (Radar and Sonar Systems)

This is an introductory course in radar and sonar system fundamentals.

Radar: The Radar System; Display System; The Radar Equation; Clutter and Multipath Effects; Processing Techniques;

Sonar: Sonar Systems; The Sonar Equation; Underwater Transducers; Transmission Loss in an Ocean Environment; Noise and Reverberation; Sonar Prediction

Prerequisite - ELTR 2110 (Analog Communications)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Labs/Tutorials - 2 hours/week = 26 hours total

ELTR 3115 (Electronic Communications - Radar)

An introductory course in radar system fundamentals.

The Radar System; Display Systems; The Radar Equation; Clutter and Multipath Effects; Processing Techniques

Prerequisite - ELTR 2110 (Analog Communications)

Duration - 13 weeks

Lectures - 2 hours/week = 26 hours total

Labs/Tutorials - 2 hours/week = 26 hours total

ELTR 3116 (Advanced Networking)

This advanced networking course covers the various levels of network protocol, from the lowest hardware levels to the highest application protocols.

Introduction to Networks; Reference Models; Network Operating Systems; Wide Area Networks; Cisco Platforms; Voice Over IP; Network Management; Network Security

Prerequisites - ELTR 3108 (Microcomputer Interfacing); CPSK 1101 (Computer Operations)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 6 hours/week

ELTR 3117 (Fabrication)

This is a practical electrical/electronic course which enables the student to obtain the practical knowledge in soldering, wire wrapping, cable formation and test lead fabrication. This course also enables the student to obtain the practical ability to insert and extract electronic components from printed circuit boards and well as make repairs to damaged traces on a PCB. In addition, the student receives knowledge in electrical safety, proper use and care of hand tools, proper use and care of equipment, and hazards and prevention of ESD.

General Safety Procedures; Basic Hand Tools Used in Electronic Repair and Fabrication; Soldering and Desoldering Techniques; Circuit Wiring Techniques; Cable Formation and Connectors; Schematic Diagrams and Component Identification

Duration - 3 weeks

Lectures - 3 hour/week

Laboratories - 9 hours/week

ELTR 3118 (Industrial Electronics & Controls)

This course is designed to enable students to understand power supplies, electrical motors and their electronic controllers in ROV applications.

Switched Mode Power Supplies (SMPS); Electrical Machines; Power Electronics; Electronic Controllers for Electrical Drives in ROV.

Duration - 10 weeks

Lectures - 4 hours/week = 40 hours total

Laboratories - 3 hours/week (6 Labs) = 18 hours total

COURSE DESCRIPTIONS

ELTR 3119 (Data Communications)

This Data Communications course provides a comprehensive data communications background to ROV candidates. The course starts off with an introduction to analog communications providing a background in amplitude modulation and frequency modulation principles including single-sideband techniques. Then the student is introduced to transmission mediums, protocols and characteristics. This is followed by digital communications systems, data transfer and emphasizes the practical application of fibre in the design and construction of communication systems and networks required for ROV operations. The approach will give the student the required communications background and a hands-on, practical understanding of cable handling, terminating, splicing, testing with optical sources, and power meters.

Introduction to Analog Communications; Amplitude Modulation and AM Systems; Single-Sideband Techniques; Frequency and Phase Modulation; Transmission Mediums and Protocols; Transmission Characteristics; Digital Communications Systems; Data Transfer; Fibre Optics.

Prerequisite - for ROV students ELTR 1301 (Control Electronics for ROV); **for ROV Advanced Technical Certificate students.** ELTK 3104 (Electrotechnology) or equivalent

Duration - 10 weeks

Lectures - 4 hour/week

Laboratories - 2 hours/week

ELTR 3120 (Integrated Circuits)

The purpose of this course is to provide the student with an exposure, understanding of data sheets and working knowledge of various integrated circuits that are related to power controls and instrumentation.

Power Supply Circuits; Waveform Generators and Comparator Circuits; Packaging Information; Motor Controller integrated Chips; Instrumentation Circuits

Prerequisites - BTech (OI) students - ELTR 2213 (Control Devices and Operational Amplifiers) and CNTL 2111 (AC Motor Controls):

BTech(UV) students - ELTR 1301 (Introduction to Electronic Devices) and ELTK 1303 (Machines and Power Systems)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (6 Labs) = 12 hours total

ELTR 3121 (Introduction to Microcomputer Interfacing)

This course provides the student with knowledge of the hardware associated with a microprocessor system and its basic interfacing requirements.

Microprocessor Systems; Memory Systems; Microprocessor System Support Circuits; Bus Structures, Digital Input/Output; Assembly Language Basics; C Language Basics; Interfacing Basics.

Prerequisites - ELTR 2102 (Digital Logic)

Duration - 13 weeks

Lectures - 3 hours/ week = 52 hours total

Laboratories - 3 hours/ week = 39 hours total

ELTR 3122 (Embedded Microcontrollers)

This course provides the student with knowledge of the hardware and software associated with Embedded Microcontrollers.

Introduction to Embedded Microcontrollers; Microcontroller Functions; Program Design & Interfacing; Programming Environments; Serial Data Communications; Data Conversion; Digital Signal Processing; Microcontroller Platforms

Prerequisites - ELTR 2214 (Interfacing)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours/week = 26 hours

ELTR 3202 (Microcomputer Applications)

This course provides the student with a knowledge of the hardware and software associated with microcomputer systems and peripherals. The course provides opportunity for students to develop interest in microcomputer systems through project work.

Microprocessor Types; Displays; Keyboards; Microcomputer Busses; Printers; Plotters; Tape and Disk Storage; Operating Systems; High Level Languages

Prerequisites - MATH 1103 (Introduction to Calculus); ELTR 3108 (Microcomputer Interfacing)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 lab @ 3 hours per week

ELTR 3208 (Computer Troubleshooting)

This course applies problem-solving techniques to typical computer equipment repair situations. Students will use divergent thinking methods to create solutions and convergent thinking to apply the solutions. The course provides opportunity for students to develop interest in microcomputer systems through project work. On completion of this course the successful student will have demonstrated that he/she has acquired a detailed knowledge of computer systems sufficient to perform planned and corrective maintenance on computer workstations.

Problem Solving Techniques; Basic Computer Service Concepts; PC Architecture; Microprocessor Types; PC Memory Architecture; Disk System Architecture; PC Bus Architectures; Computer Displays; Peripheral Devices; Networking Fundamentals; Troubleshooting Techniques

Prerequisite - CPSK 1101 (Computer Operations)

Duration - 13 weeks

Lectures - 3 hours per week

Laboratories - 3 hours/week

ELTR 3209 (Introduction to Computers and Networking)

This course introduces students to the field of digital electronics, and computer systems and networks. It is designed to give students a basic understanding of the computer based control systems being used in modern marine applications.

Introduction to Digital Circuits; Combinational Logic; Computer Fundamentals; Networking Fundamentals; Troubleshooting Techniques; Computer and Other Microprocessor Based Applications on Board Vessels

Prerequisite - CNTL 2110 (Instrumentation, Controls & Automation)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/week

ELTR 3210 (Advanced Microcomputer Interfacing)

This course provides the student with advance knowledge of the hardware associated with a microprocessor system and the interfacing requirements for communication with the environment.

Pentium Processors Features; Analog Input/Output; Embedded Systems; C++ Programming; Mixing Assembler and C++; Advanced Interfacing Design and Applications

Prerequisites - ELTR 3121 (Introduction to Microcomputer Interfacing)

Duration - 13 weeks

Lectures - 4 hours/ week = 52 hours total

Laboratories - 3 hours/ week = 39 hours total

ELTR 3211 (Control Devices and Systems)

The purpose of this course is to provide the student with an understanding of the theory relating to Control devices and systems, including Bode analysis. The theory covered in class will be applied and validated during the laboratory periods.

Transducers and Sensors; Process Control Theory; Bode Analysis

Prerequisites - ELTR 1301 (Introduction to Electronic Devices); ELTR 2116 (Industrial Electronics and Controls)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 lab @ 3 hours per week = 39 hours total

ELTR 3212 (Networking Basics)

This introductory course in local area networks, wide area networks, and industrial area networks covers the various levels of network protocols, from the lowest hardware levels to the highest application protocols.

Network Environment; Network Reference Models; Area Networks; Network Routing; Network Management; Networked Applications; Industrial Networks

Prerequisite - CPSK 1102 (Introduction to Programming); ELTR 2102 (Digital Logic)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 3 hours/week = 39 hours

ELTR 3400 (Electronic Communications)

This Data Communications course provides a comprehensive data communications background for Ocean Instrumentation Candidates. The course starts off with an introduction to analog communications providing a background in amplitude modulation and frequency modulation principles including single-sideband techniques. Then the student is introduced to transmission mediums, protocols and characteristics. This is followed by digital communications systems, data transfer and emphasizes the practical application of fibre in the design and construction of communication systems and networks required in the field of Ocean Instrumentation. The approach will give the student the required communications background and a hands-on, practical understanding of cable handling, terminating, splicing, testing with optical sources, power meters, as well as hands on practice with Ocean Sensor Systems.

Introduction to Analog Communications; Amplitude Modulation and AM Systems; Single-Sideband Techniques; Frequency and Phase Modulation; Transmission Mediums and Protocols; Transmission Characteristics; Digital Communications Systems; Data Transfer; Sensors and Data Collection.

Prerequisite - ELTK 1200 (Electrotechnology); ELTR 1102 (Electronic Devices); ELTR 2113 (Fibre Optics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENGR 0105 (Engineering Drawing)

This is a basic course in the fundamentals of engineering drawing.

Drafting Fundamentals; Applied Geometry; Orthographic Projection; Dimensioning; and Production Processes and Operations

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 2 hours/week

ENGR 0107 (Blueprint Reading and Interpretation)

This course is designed to develop the skills necessary for the student to interpret working drawings and prints common to industry and offshore fabrication.

Purpose and Make-up of Blueprints; Basic Lines and Views; Sketching; Notes and Specifications; Dimensions; Structural Shapes; Other Views; Sections; Detail and Assembly Prints; Abbreviations and Symbols; Welding Symbols, Blueprint Reading and Layout and Piping Drawings.

Prerequisite - None

Duration - 13 weeks

Lectures/Laboratories - 5/0 hours/week

COURSE DESCRIPTIONS

ENGR 0108 (Engineering Graphics)

This course is designed to develop the skills necessary for the student to interpret working drawings and prints common to industry.

Drafting Fundamentals, Notes and Specifications, Dimensions, Bill of Materials, Sections, Working Drawings, Abbreviations and Symbols, Production and Processes, Welding Symbols, Piping Drawings, Electrical Drawings, Fasteners

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENGR 0200 (Engineering Drawing)

This is an introductory course in the preparation and interpretation of detail and assembly working drawings.

Pictorial Drawing and Sketching; Sectional Views; Fasteners; Working Drawings; Piping Drawings; Welding Drawings; and Electrical Drawings

Prerequisite - ENGR 0105 (Engineering Drawing) or equivalent

Duration - 13 weeks

Lectures - 1 hour/week = 13 hours

Laboratories - 2 hours/week = 26 hours

ENGR 0204 (Template Development)

This introductory level course is designed to familiarize the student with practical aspects of template development.

Template Development; Layout and Template Development Terminology; Establishing Line of Cut Using Templates; Shape Development; Layout Tools and Procedures; Template Development Using Triangular, Radial and Parallel Lines; Layout Operation for Structural Fabrications; Operations Required to Develop Wrap Around Templates for Pipe and Tubing.

Prerequisite - ENGR 0107 (Blueprint Reading and Interpretation)

Duration - 13 weeks

Lectures - 3/0

ENGR 1100 (Engineering Graphics)

Engineering Graphics provides visually oriented data that is useable by technical, engineering, and manufacturing personnel to assist in the production of goods and services. The method of creating Engineering Drawings has changed from manual drafting to Computer Aided Drafting; however, the technical content of Engineering Graphics has not changed.

Introduction to Technical Drawing; Introduction to CAD; Geometric Constructions; Orthographic Projection; Pictorial Sketching; Dimensioning; Sectional Views

Duration - 13 weeks

Lectures/Laboratories - 5 hours/week

ENGR 1101 (Engineering Drawing)

This is an introductory level course designed to provide students with the basics of mechanical drafting and freehand sketching. Included will be topics addressing drafting fundamentals, use of drafting equipment, and informative retrieval from mechanical blueprints. This course is NOT a drafting course nor a course directed to CAD.

Drafting Fundamentals; Applied Geometry; Orthographic Projection; Sectional Views; Dimensioning; Detail and Assembly Working Drawings

Duration - 13 weeks

Lectures/Laboratories - 3 hours/week

ENGR 1102 (Engineering Drawing)

This course is designed to build on the basic drafting completed in ENGR 1103 (Engineering Graphics) with primary application to marine machinery assembly drawings. The student will apply basic machine shop and engineering knowledge to select materials and make working assembly drawings, using traditional methods, of selected marine machinery. Drawing diagram reading exercises are used to extract information as required in the work place.

Engineering Drawing Basics; Piping Drawings; Welding Drawings; Electrical Drawings; Assembly Drawings; Equipment Operation Manuals and Ship Drawings

Prerequisite - ENGR 1103 (Engineering Graphics)

Duration - 13 weeks

Lectures/Laboratories - 4 hours/week

Total - 52 hours

ENGR 1103 (Engineering Graphics)

Engineering Graphics provides visually oriented data that is useable by technical, engineering, and manufacturing personnel to assist in the production of goods and services.

Introduction to Technical Drawing; Geometric Constructions; Pictorial Sketching; Orthographic Projection; Scale; Blueprint Interpretation; Dimensioning; Sectional Views

Duration - 13 weeks

Lectures - 2 hours/week = 26 hrs total

Laboratories - 2 hours/week = 26 hrs total

ENGR 1104 (Engineering Graphics)

Engineering Graphics provides visually oriented data that is useable by technical, engineering, and manufacturing personnel to assist in the production of goods and services. The method of creating Engineering Drawings has changed from manual drafting to Computer Aided Drafting.

Introduction to CAD; Editing Existing Entities; Advanced Drawing Construction; Dimensioning Variables; Plotting

Prerequisites - ENGR 1103 (Engineering Graphics)

Duration - 5 weeks

Lectures/Labs - 8 hours/week = 40 hours

ENGR 1105 (Engineering Graphics)

This Engineering Graphics course provides students with knowledge and skills pertaining to visually oriented data that is useable by technical, engineering, and manufacturing personnel to assist in the production of goods and services.

Introduction to Technical Drawing; Geometric Constructions; Pictorial Sketching; Orthographic Projection; Scale; Blueprint Interpretation; Dimensioning; Sectional Views

Duration - 13 weeks

Lectures - 2 hours/week = 26 hrs total

Laboratories - 2 hours/week = 26 hrs total

ENGR 1201 (Introduction to AutoCAD)

This is an introductory course designed to provide students with fundamental competency in the use of AutoCAD.

Introduction to CAD; Editing Existing Entities; Advanced Drawing Construction; Dimensioning Variables; Plotting

Prerequisites - ENGR 1103 (Engineering Graphics)

Duration - 13 weeks

Lectures - 0 hours/week = 0 hours total

Laboratories - 3 hours/week = 39 hours total

ENGR 1202 (Engineering Graphics)

This course is designed to develop the skills necessary for the student to interpret working drawings and prints common to industry. This course will also develop the necessary skills to produce engineering drawings using AutoCAD (computer aided drafting).

Drafting Fundamentals, Notes and Specifications, Dimensions, Bill of Materials, Sections, Working Drawings, Abbreviations and Symbols, Production and Processes, Welding Symbols, Piping Drawings, Electrical Drawings, Fasteners and Introduction to AutoCAD.

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 3 hours/week

ENGR 1302 (ROV Engineering Drawing)

This is an introductory level course designed to provide students with the basics of mechanical drafting and freehand sketching. Included will be topics addressing drafting fundamentals, use of drafting equipment, and informative retrieval from mechanical blueprints. This course is a basic drafting course and not a course directed to CAD.

Drafting Fundamentals; Applied Geometry; Orthographic Projection; Sectional Views; Dimensioning; Detail and Assemble Working Drawings

Duration - 5 weeks

Lectures/Labs - 5 hours/week = 25 hours

ENGR 2104 (Blueprint Reading)

This course is designed to develop the skills necessary for the student to interpret working drawings and prints common to industry.

Basic Fundamentals; Sketching; Notes and Specifications; Dimensions; Bill of Materials; Sections; Working Drawings; Abbreviations and Symbols; Production and Processes; Welding Symbols; Piping Drawings; Electrical Drawings; Hydraulic Drawings; Fasteners

Lectures - 40 hours

ENGR 3100 (Blueprint Reading)

This course is designed to develop the skills necessary for the student to interpret working drawings and prints common to industry.

Basic Fundamentals; Sketching; Notes and Specifications; Dimensions; Bill of Materials; Sections; Working Drawings; Abbreviations and Symbols; Production and Processes; Welding Symbols; Piping Drawings; Electrical Drawings and Hydraulic Drawings

Lectures - 40 hours

ENSY 1101 (Prime Movers & Auxiliary Power Plants)

This course is designed to provide the students with the engineering knowledge needed to participate in the design of ship power plants and systems.

Ship Power Plants; Marine Diesel Engines; Marine Gas Turbines; Marine Steam Generators; Marine Steam Turbines

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

ENSY 1200 (Auxiliary Components)

This is an introductory course designed to give students a knowledge and understanding of the components required to design and construct the auxiliary piping systems of ships and offshore platforms.

Marine Materials; Piping for Marine Application; Valves; Strainers and Steam Traps; Piping Supports and Expansion Joints; Vibration Isolators; Pipe Insulation; Heat Exchangers; Piping Arrangement Drafting.

Prerequisite - ENGR 1100 (Engineering Graphics)

Duration - 5 weeks

Lectures - 6 hours/week

Laboratories - 4 hours/week

ENSY 1201 (Ship Types And Systems)

This is an introductory course designed to provide students with engineering knowledge about ship types.

Introduction to Modern Ship Concept; Ship Terminology; Materials Used in Ship Construction; Commercial Ships; Special Purpose Ships; Dynamically Supported Vessels; General Arrangement Drawing; Ship Operations Onboard M.I. Training

COURSE DESCRIPTIONS

Vessel; Propulsion Systems; Prime Movers; Pumping and Piping Systems; Control Systems; Marine Engineering Drawing

Prerequisite - ENGR 1100 (Engineering Graphics)

Duration - 5 weeks

ENSY 1202 (Introduction to Marine Engineering Systems Design)

This is an introductory course designed to provide students with practical knowledge of the ship's environment, ship terminology and various aspects of Marine Engineering Systems Design.

The Ship's Environment; Ship Terminology; Hull Form; Pumps; Pumping and Piping Systems; Piping for Marine Applications; Valves

Co-requisite - Engineering Graphics 1103

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

ENSY 2000 (Ship Engineering Design Process)

This course sets the methodology for the development of the student's engineering design project. At the same time it offers an opportunity to assimilate some economic aspects by preparing an owner specification in conjunction with an economic study.

Analysis and Response to Request For Proposal; Indexing and Scheduling; Estimating Ship Construction Costs and Life Cycle Costing; Design Package Documentation; Relationship of Auxiliary Systems to Vessel Type; Quality Control in Shipbuilding

Prerequisites - ENSY 1202 (Introduction to Marine Engineering Systems Design)

Co-Requisite - CMSK 1201 (Communication at Work)

Duration - 5 weeks

Lectures - 6 hours/week = 30 hours total

Laboratories - 2 hours/week = 10 hours total

ENSY 2102 (Propulsion Technology)

This course is designed to provide the students of the Marine Engineering Systems Design program with the engineering knowledge needed to participate in the professional process of ship propulsion systems design.

Ship Propulsion Units Geometry and Function; Propulsion Shafting Design and Arrangement; Propulsion Shafting Components Design and Selection; Propellers; Thrusters; Reduction Gears and Other Transmission Systems; Electric Propulsion Motors; Ship Propulsion Shafting Vibration; Installation Procedures and Testing

Prerequisites - ENSY 1202 (Introduction to Marine Engineering Systems Design); NARC 1102 (Ship Structural Geometry)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENSY 2103 (Power and Resistance Technology)

This course introduces students to the concepts associated with ship movement and resistance. The course prepares students to perform calculations associated with propulsion and propeller selection.

Introduction to Ship Resistance; Ship Friction Resistance; Wave Making Resistance; Other Ship Resistance Components; Similarity and Model Testing; Ship Power and Propulsion; Screw Propellers; Propeller Ship Interaction; Propeller Series; Propeller Cavitation

Prerequisites - Math 1101 (Introduction to Calculus); Flds 2100 (Fluid Mechanics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours/week every week for 13 weeks = 26 hours _ 65 hours total

ENSY 2200 (Auxiliary Systems I)

This is a technical course structured to give students the necessary knowledge of how auxiliary systems must function and the operational criteria which must be considered in order to design a given system. Various permutations are considered depending on vessels types. The end result will be the production by the student of his or her own vessel diagrams for the subject systems.

Tank Capacities; Bilge Systems, Ballast Systems; Fire Systems; Sea and Fresh Water Cooling Systems; Fuel Oil Systems

Prerequisites - ENSY 1202 (Introduction to MESD); CMSK 1201 (Technical Communications 2)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENSY 2201 (Auxiliary Systems II)

This course completes the Auxiliary Systems aspect of the program, permitting the student to assimilate the functions and operating criteria and to apply them to the design of the systems listed below. Production of some systems in diagrammatic form will help in the assimilation of the subject matter.

Sanitary Supply and Discharge Systems; Lubricating Oil Systems; Compressed Air Systems; Exhaust Gases Systems and Gas Turbine Intakes; Hull Machinery Systems

Prerequisite - ENSY 2200 (Auxiliary Systems I)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENSY 2202 (Ship's Spaces Ventilation)

This course is designed to give the students a knowledge and understanding of how to calculate the heat accumulation from all operating equipment, size, select and produce drawings for the ventilation systems of all machinery spaces. All required components will be explained and assimilated.

Mechanical and Natural Ventilation; Ventilation Guidelines for Accommodations; Ventilation Guidelines for Control Rooms; Ventilation Guidelines for Machinery Spaces; Marine Ventilation

Fans; Low and High Velocity Systems; Heating and Air Conditioning; Ventilation System Drafting

Prerequisite - ENSY 1202 (Introduction to Marine Engineering Systems Design); ENSY 2201 (Auxiliary Systems)

Duration - 5 weeks

Lectures - 6 hours/week

Laboratories - 4 hours/week

ENSY 3000 (Cold Environment Design)

This is a technical course structured to give students comprehensive information and detailed knowledge of how the cold environment of the Arctic and Sub-Arctic impact on the design of ship operating in these regions. In addition, the students will learn how the engineer must apply the lessons learned in the past and use innovative ideas and techniques to design ice operating ship propulsion systems, auxiliary systems and equipment that are actually working in the cold environment.

Ice and Environmental Conditions; Propulsion of Icebreaking Ships; Selection of Propulsion Systems; Propulsion Shafting for Icebreaking Ships; Ship Service, Controls, Instrumentation and Electric Requirements; Cooling Systems for Icebreaking Ships; Icebreaking, Ice Releasing and Roll Stabilization Systems; Steering and Augmentation to Maneuverability in Ice; Protective Measures against the Cold Environment; Cold Design Special Features

Prerequisites - ENSY 2102 (Propulsion Technology); ENSY 2201 (Auxiliary Systems)

Duration - 5 weeks

Lectures - 6 hours/week = 30 hours total

Laboratories - 2 hours/week = 10 hours total

ENSY 3002 (Offshore Platform Technology)

This is a technical course structured to give students a general idea of drilling operations and comprehensive information and details of how offshore platform are designed and how systems are designed and installed. The Auxiliary Systems, Power Plants, Controls, Production Systems, Floating Facility, Off Loading Method and Maintenance Vehicles are discussed and assimilated for functions and details.

Offshore Environmental Conditions; Type of Offshore Platforms and Operating Methods; Drilling Operations and Components used for Offshore Work; Platform and Auxiliary Systems Utilized both for Unit Operation or for Drilling Work; Sub-Sea Production and Remote Controls; Arctic Offshore Methods; Offshore Platform Protection from Freezing; Project

Prerequisites - ENSY 2102 (Propulsion Technology); ENSY 2201 (Auxiliary Systems)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENSY 3102 (Propulsion Arrangement Design)

This course concentrates on the complete design and layout of ship propulsion systems. Students will learn to complete propulsion train drawings taking into account Shaft Diameters, Propellers, Bearings, Thrust Block, Couplings and Clutches capable of absorbing torsional and vibration forces.

Propulsion Shafting Design; Propeller Selection; Sterntubes and Glands Design; Bearings Selection; Reduction Gears Selection; Coupling and Clutches Selection; Brakes, Turning Gears and Chocking

Prerequisites - ENSY 2102 (Propulsion Technology); ENSY 2103 (Power and Resistance Technology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

ENSY 3103 (Ship Stability for MESD)

This course introduces the fundamentals of hydrostatics, ship stability and damage stability. It aims to develop an understanding of stability theory, criteria for stability assessment, and applicable regulations. Loadline and tonnage regulations, trim and stability books and industry software are studied. Emphasis is placed on application of the theory as related to ship systems and tanks.

Basic Hydrostatics; Ship Mass and Center of Mass; Longitudinal Stability and Trim; Small Angle Stability; Large Angle Stability; Tank Calibrations; Free Surface; Subdivision; Damaged Stability; Rules and Regulations, Required Submissions, and Testing; Tonnage, Freeboard, and Downflooding; Computer Applications

Prerequisite - NARC 1102 (Ship Structural Geometry); PHYS 1100 (Physics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hour/week = 26 hours total

ENSY 3104 (Applied MESD)

This course will demonstrate the practical application of fundamental topics of marine engineering previously introduced in the program, including Fluids, Strength of Materials and Thermodynamics. Engineering analysis will be applied to various marine systems as emphasis is placed on application of the theory.

Applied Fluid Dynamics; Applied Strength of Materials; Applied Thermodynamics; Special Topics in Applied Marine Engineering Design

Prerequisites - FLDS 2100 (Fluid Mechanics); MATH 2101 (Advanced Calculus); TRMO 2200 (Thermodynamics); MTPR 3100 (Strength of Materials)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

COURSE DESCRIPTIONS

ENSY 3300 (Ship Engineering Project)

This course is structured so that the student will prepare the first phase of most documents required for a design project package. The results from other specialized courses are incorporated in the preparation of this Ship Engineering Project.

Machinery Arrangement; Ventilation Arrangement; Exhaust Arrangement; Sea Suction Technology; Bow Thruster Compartment; Auxiliaries

Prerequisites - ENSY 2102 (Propulsion Technology); ENSY 2103 (Power and Resistance Technology); ENSY 2201 (Auxiliary Systems)

Duration - 13 weeks

Lectures - 1 hour/week

Laboratories - 4 hours/week

ENSY 3301 (Ship Engineering Project)

This course is structured to bring to completion, the preparation of the documents required for a design project package started with the course Systems Design Project 3100. In addition to original work the results of other specialized courses are also incorporated in the machinery arrangement of the ship engineering project.

Machinery Arrangement; Specification; Auxiliary Components Finishing; Calculation Book; Integration of Systems; Presentation Methods; Final All Day Exam

Prerequisite - ENSY 3300 (Ship Engineering Project)

Duration - 13 weeks

Lectures - 1 hour/week

Laboratories - 4 hours/week

ENSY 3302 (Marine Electrical Project)

This is a project course designed for advanced Marine Engineering Systems Design students. It is intended to familiarize the students with the design of the electrical system aboard ships and to enable them to complete the electrical design required for their technical project.

Planning; System Analysis; Project Research; System Design; Report Preparation; Report Presentation

Prerequisite - ELTK 2102 (Marine Electrical Systems)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 3 hours/week

ENSY 3303 (Auxiliary Machinery Arrangement)

This is a technical course that will enable students to determine the appropriate auxiliary systems, including control room equipment, to be included in their ship engineering project, and to determine their location in the design.

Engine Room Machinery, Equipment and Auxiliary Components; Sizing, Locating and Reducing Machinery and Auxiliary Components; Machinery Location and Engine Room Outfitting; Noise Control Strategies for Machinery; Specialized Systems

Prerequisite - ENSY 2201 (Auxiliary Systems)

Duration - 13 weeks

Lectures - 2 hours/week = 26 hours total

Laboratories - 2 hours/week = 26 hours total

ENSY 3304 (Piping Arrangement Design)

This is a technical course structured to give students the required skills to produce drawings of piping arrangements to be fitted within the irregular and confined space of a ship's machinery compartment. In addition students will learn how to select components, avoid interferences, minimize drafting time, produce a Bill of Material and perform final calculations. They will also acquire techniques to produce pipe spooling using modern methodologies.

Component Selection; Piping Arrangement Techniques; Piping Arrangement Layout; Development of Drawings; Pipe Spooling Technique; Bill of Material and Drawing Components Identification; Velocity and Sizing Calculations Checks

Prerequisite - ENSY 2201 (Auxiliary Systems)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 3 hours/week

ENSY 3305 (Project Presentation)

This course will showcase work completed on student project vessels and will demonstrate the practical application of resolving a design problem through applied research. Definition of the problem, analysis and potential technical solutions to the design problem will be established through research and presented to an audience of peers.

Design Problem Definition; Generation of Alternatives and Solutions; Evaluation of Solutions; Presentation Techniques

Prerequisite - ENSY 3301 (Ship Engineering Project); ENSY 3302 (Marine Electrical Project); ENSY 3303 (Auxiliary Machinery Arrangement); ENSY 3304 (Piping Arrangement Design)

Duration - 5 weeks

Lectures - 4 hours/week = 20 hours

Laboratories - 6 hours/week = 30 hours

FDTE 1100 (Introduction to Food Science & Technology)

An introductory course that describes the fields of food science and food technology including introductions to nutrition, food chemistry, microbiology, and food processing. Selected aspects of marketing and product development will also be introduced. Size, scope, functions and contemporary problems of the food industry will be discussed. The laboratory component will involve a study of common methods of food processing/preservation.

Food Science and Technology; Characteristics of the Food Industry; Food Constituents; Nutrition; Food Changes: Causes and Control; Food Processing; Marketing and Product Development; Speciality Foods; Issues

Duration - 13 weeks

Lectures - 39 hours (3 hours/week)

Laboratories - 26 hours (2 hours/week)

FDTE 2103 (Food Engineering Principles)

This is an advanced level course designed to provide the student with a rudimentary understanding of food engineering principles enabling students to comprehend food engineering applications and unit operations.

Introduction; Energy and Mass; Liquid Food Transport/Rheology; Energy for Food Processing; Heat Transfer in Food Processing; Refrigeration; Freezing of Food; Evaporation; Psychometrics; Dehydration of Foods

Prerequisites - MATH 1200 (Calculus); PHYS 1200 (Physics)

Lectures - 39 hours

Laboratories - 26 hours

FDTE 2104 (Seminar Series)

This course will present participants with selected topics of relevance to food technology.

Current Issues in Food Technology

Duration - 13 weeks

FDTE 2105 (Nutrition)

This course provides the basic concepts in nutrition and introduces the nutrients of importance to human nutrition.

Nutrients and Nourishment; Nutrition Guidelines and Assessment; Digestion and Absorption; Carbohydrates and Dietary Fibre; Lipids; Proteins; Minerals and Vitamins; Water

Prerequisite - FDTE 1100 (Introduction to Food Science & Technology)

Lectures - 39 hours

FDTE 2112 (Food Safety and Sanitation)

This course is designed to introduce students to the various aspects of sanitation and to provide students the necessary tools to design, and implement an effective sanitation program.

Sanitation Programs for Food Plants; Hazard Avoidance and Quality Management; Cleaning and Sanitizing; Micro-organisms; Personal Hygiene; Pest and Pest Control; Food Plant Design and Equipment Design; Sanitation of Incoming Materials; Water Sanitation; Allergens; Waste Treatment; Food Regulations

Prerequisite - BIOL 1100 (Biology)

Duration (DU) - 13 weeks instruction

Lectures (LC) - 2 hours/week = 26 hours total

Laboratories (LH) - 3 hours/week = 39 hours total

FDTE 2118 (Canned Foods & Thermal Processing)

This is an industry training course providing competencies relevant to thermal processing operations. Principles of HACCP require that personnel be appropriately trained for roles in food processing establishments. Acts and Regulations enforced by the Canadian Food Inspection Agency require control over food contamination. The Facilities Inspection Manual, stemming from the Fish Inspection Regulations, requires that, "The designated person in control of the retort operations has successfully completed a recognized course in thermal processing and retort operation."

Introduction to Site Microbiology; Product Preparation; Processing Equipment and Procedure; Container Integrity; Post Container Handling; Incubation; Regulations and Codes of Practice

Prerequisite - High School graduation OR recommended by employer.

Duration - 5 days (35 hours)

FDTE 2201 (Seafood Processing Technology)

This course is designed to familiarize students with the techniques and technology involved in the production of seafood products.

Fisheries Overview; Preservation Methods; Primary Processing; Secondary Processing; By-products Utilization

Prerequisites - QLAS 2104 (Food Evaluation)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

FDTE 2202 (Food Processing I)

This course is designed to provide students with an understanding of protein foods, their composition and their role in the food industry. Students are also provided with an overview of the role of the Canadian Food Inspection Agency (CFIA) in the production and processing of those foods.

Business Aspects; Red Meat; Poultry and Eggs; Dairy Production; Seafood; Government Regulations

Prerequisites - BIOL 1100 (Biology); FDTE 1100 (Introduction to Food Science and Technology)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

FDTE 3100 (Food Engineering - Unit Operations)

This is an advanced level course designed to introduce food engineering unit operations to students.

Introduction; Preliminary Operations; Conversion Operations; Preservation Operations; Materials Handling

Prerequisite - FDTE 2103 (Food Engineering Principles)

Lectures - 39 hours

Laboratories - 26 hours

COURSE DESCRIPTIONS

FDTE 3101 (Food Biotechnology)

This is an advanced level course designed to provide the student with an understanding of the various aspects of food biotechnology.

Overview: Food Biotechnology; Tools of Biotechnology; Cell Culture Technology; Plant Cell Culture; Fermentation Technology; Enzyme Technology; Immobilization Technology; Applications in Agriculture; Applications in Food; Marine Biotechnology; Safety of Foods Developed by Biotechnology; Biotechnology in Waster Management in Food Industry; Biosensors for Biological Monitoring; Safety and Regulatory Issues of Biotechnology-derived Foods

Prerequisites - BIOL 2202 (Food Microbiology); CHEM 2102 (Biological Chemistry); FDTE 3107 (Food Processing II)

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours total

FDTE 3102 (Food Safety Enhancement Program/ Hazard Analysis Critical Control Point)

This course provides participants with an understanding of the concepts, principles, terminology, and skills required for the development, implementation, maintenance, validation and reassessment, and auditing of the FSEP/HACCP system within food processing establishments.

Introduction to HACCP and FSEP; FSEP Prerequisite Programs; Development of a HACCP Plan; Hazard Analysis; Critical Control Point Determination; Validation and Reassessment of the HACCP Plan; Audit Principles

Duration - 3 days

FDTE 3103 (Hazard Analysis Critical Control Point)

This course is designed to provide participants with an understanding of requirements of the Hazard Analysis Critical Control Point (HACCP) system that exists in federally registered fish processing establishments.

HACCP System; HACCP Program Development; Preliminary Steps of HACCP Development; Conduct a Hazard Analysis (HACCP Principle # 1); Determine Critical Control Points (HACCP Principle # 2); Establish Critical Limits (HACCP Principle # 3); Establish Monitoring Procedures (HACCP Principle # 4); Establish Corrective Action Procedures (HACCP Principle # 5); Establish Verification Procedures (HACCP Principle # 6); Establish Documentation and Record Keeping (HACCP Principle # 7)

Duration - 2 days

FDTE 3104 (Quality Management Program)

This course is designed to provide participants with an understanding of requirements of the Quality Management Program (QMP) that exist in federally registered fish processing establishments.

QMP Reference Standard; Management Roles and Responsibilities; Background Product and Process Information; Prerequisite Plan; Regulatory Action Point (RAP) Plan; Hazard

Analysis Critical Control Point (HACCP) Plan; Verification and Maintenance of the QMP Plan; Record Keeping; Auditing of the QMP Plan.

Duration - 3 days

FDTE 3106 (Seafood Processing Technology)

This course is designed to familiarize students with the techniques and technology involved in the production of seafood products.

Fisheries Overview; Preservation Methods; Primary Processing; Secondary Processing; By-products Utilization

Prerequisites - QLAS 2104 (Food Evaluation)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 3 hours/week = 39 hour total

FDTE 3107 (Food Processing II)

This course is an advanced level course designed to provide the student with an understanding of a variety of food processing techniques for foods of plant origin.

Introduction to Food Processing; Fresh Fruit and Vegetable Processing; Jams, Jellies and Fruit Spreads; Fruit Juice and Other Beverage Processing; Processing of Edible Fats and Oils of Plant Origin; Cereals, Grains and Starches; Soybean Technology; Sugars, Sweeteners and Confectionary Products; Food Hydrocolloids

Prerequisites - BIOL 2102 (Microbiology) or BIOL 2105 (Microbiology); FDTE 2103 (Food Engineering Principles); FDTE 2112 (Food Sanitation); FDTE 2202 (Food Processing I)

Co-requisites - CHEM 3100 (Chemistry)

Duration - 13 weeks

Lectures - 3 hours/week = 39 total hours

Laboratories - 3 hours once per week = 39 total hours

FDTE 3108 (An Introduction to Food Manufacturing Food Safety Standards)

This course provides participants with an understanding of the concepts, requirements, terminology, and skills required for the implementation, certification and maintenance of a third-party food manufacturing food safety standard within food processing establishments.

Global Food Safety Initiative (GFSI); Governance of the Food Safety Standards; British Retail Consortium Standard (BRC); Safe Quality Food Standard (SQF); Food Safety System Certification 22000 (FSSC 22000); Global Red Meat Standard (GRMS); International Features Standard (IFS)

Duration - 3 days

FDTE 4100 (World Food Industry Overview)

This introductory course is designed to give students a basic understanding of the food industry. The course covers the history of foods, preservation methods, packaging, food safety, and the other various components that make up the food industries.

History of World Food Production; Food and Human

Consumption; Processes for Food Preservation; Packaging of Foods; Food Safety; Meat, Poultry and Fish; Fruit and Vegetables Industry; Dairy Industry

Duration - 39 hours total

Lectures - 39 hours total

FDTE 4102 (Food Inspection Techniques)

This course is designed to provide general guidelines useful for a wide range of inspection activities for monitoring the safety and quality of foods.

Overview of Food Safety; General Inspection Approach; Sampling; Consumer Reactions to Food Safety Crises; Subjective and Objective Methods; Special Investigations; Evidence Development; Risk Management; Export-Import Surveillance; Foreign Bodies in Food

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours total

Laboratories - 3 hours once per week = 39 hours total

FDTE 4104 (Food-Borne Diseases/Toxicology)

This course is designed to provide the student with the knowledge of the biological and chemical agents associated with foods and their effect on human health.

Introduction; Chemical Toxicants in Food: an Overview; Naturally Occurring Toxicants; Unnatural Chemical Agents: Accidental; Unnatural Chemical Agents: Additives; Nutritional Biohazards; Food Irradiation; Food Sensitivities; Food Processing, Nutritional Quality and Safety; Biological Agents

Lectures - 39 hours total

Laboratories - 39 hours total

FDTE 4105 (Food Safety & Sanitation)

This course is designed to provide students with an detailed information concerning sanitation and good hygiene practices. The course will enable students to set policies and design cost-effective programs.

Introduction; Regulations and Buyer Drive Programs Affecting Food Sanitation; Microbiology; The Control of Microorganisms; Cleaning and Sanitization Practices; Pest Control; Industry Specific Sanitation Considerations; Elements of an Effective Sanitation Program; Facility Design, Maintenance and Construction

Duration (DU) - 13 weeks

Lectures (LC) - 2 hours per week = 26 total hours

Laboratories (LH) - 2 hours once per week = 26 total hours

FDTE 4110 (Introduction to Water and Wastewater Treatment)

This course is designed as an introduction to water and wastewater treatment systems to provide a foundation for further study in the subject.

Water Process Treatment Train; Wastewater Process Treatment Train

Duration - 7 weeks

Lectures - 2 hours/week

FDTE 4111 (Food Processing)

This introductory course is designed to provide students with a basic understanding of food processing. The course covers the history of food processing and provides an overview of processing in the meat, poultry and egg, dairy, seafood, grains, and fruits and vegetables sectors of the food industry. It also covers food preservation methods and packaging considerations, two vital and integral components relevant to all sectors of the food processing industry.

History of Food; Meat Processing; Poultry and Egg Production/ Processing; Dairy Processing; Seafood Processing; Cereals, Grains and Starches; Fruits and Vegetables; Food Preservation Methods; Packaging

Prerequisites - None

Duration - 13 weeks

Lectures - 4 hours per week = 52 total hours

Laboratories - 2 hours once every 3 weeks (during weeks 3, 6 and 9 in the schedule) = 6 total hours

FDTE 4203 (Water and Wastewater Processing I)

This course is designed to enhance the student's understanding of the technical skills required for water and wastewater treatment processes. It will focus on system analysis and trouble shooting.

Basic Fluid Mechanics; Water Treatment Operations; Wastewater Treatment Operations; Water Stabilization

Prerequisite - FDTE 4110 (Introduction to Water and Wastewater Treatment)

Lectures - 39 hours

Laboratories - 26 hours

FDTE 4204 (Water and Wastewater Processing II)

This course is designed to provide students with an understanding of water and wastewater systems operation and maintenance emphasizing trouble shooting, efficiency, liability and safety.

Instrumentation and Controls Systems for Water and Wastewater Systems; Water Distribution System Operation and Maintenance; Water Treatment Plant Operation and Maintenance; Wastewater Collection System Operation and Maintenance; Wastewater Treatment Plant Operation and Maintenance; Septic Tanks and Associated Pumps; Safety; Administration and Record Keeping

Prerequisite - FDTE 4203 (Water and Wastewater Processing I)

Lectures - 40 Hours (8 hours per week for 5 weeks)

Laboratories - 24 Hours (6 hours per week for 4 weeks)

COURSE DESCRIPTIONS

FIRE 0011 (Firefighter - Level 1)

This introductory level course is designed to provide the student with the theoretical and practical training to function as an integral member of a firefighting team. It meets and/or exceeds National Fire Protection Association (NFPA) 1001 Professional Standards.

Firefighter Orientation; Firefighter Safety and Health; Fire Behaviour; Building Construction; Firefighter Personal Protective Equipment; Portable Fire Extinguishers; Ropes and Knots; Rescue and Extrication; Forcible Entry; Ground Ladders; Ventilation; Water Supply; Fire Hose; Fire Streams; Fire Control; Fire Detection, Alarm and Suppression Systems; Loss Control; Protecting Fire Scene Evidence; Fire Department Communications

Prerequisites - FIRE 0027 (Advanced Medical First Responder Level II (80 hours))

NOTE: Successful completion of NFPA 472 Hazardous Materials Awareness and Operations is required in order to receive Certification in NFPA 1001 – Firefighter – Level I

Duration - 25 days

Lectures - 10 days

Practical Exercises - 15 days

FIRE 0021 (Level C - CPR)

An approved training provider will deliver this one-day course.

FIRE 0026 (Marine Based Fire Fighting For Land-Based Firefighters (Awareness Level))

This course introduces the land-based firefighter to the many aspects of marine firefighting that require special attention due to the unique environment encountered onboard vessels.

Marine Terminals; Piers and Wharves; Vessel Familiarization and Basic Vessel Construction; Types of Vessels; Vessel Fire Control Plan; Interior Construction: Structural Fire Protection; Marine Environment; Authority of Emergency Responders.

Prerequisite - FIRE 0011 (Firefighter - Level I)

Duration - 3 days (21 hours)

FIRE 0027 (Advanced Medical First Responder Level II (80 hours))

An approved training provider will deliver this 10-day course.

FIRE 0030 (Fire Pumper Driver/Operator)

This course is designed to give students the knowledge to operate and to maintain a fire pumper in safe working condition.

The Driver/Operator; Types of Fire Apparatus Equipped with a Fire Pump; Introduction to Apparatus Inspection and Maintenance; Operating Emergency Vehicles; Positioning Apparatus; Fire Pump Theory; Operating Fire Pumps; Static Water Supply Sources; Relay Pumping Operations; Water Shuttle Operations; Foam Equipment and Systems; Apparatus Testing; What is Water and Where it Comes From; Fire Hose Nozzles and Flow Rates; Theoretical Pressure Calculations; Fire Ground Hydraulic Calculations;

Prerequisites - Entry into the Fire Rescue Program

NOTE: Successful completion of NFPA 1001 - Firefighter - Level I is required for those participants who intend to complete the NFPA 1002 testing for Fire Pumper Driver/Operator

Duration - 15 days

Lectures - 5 days

Practical - 8 days

Testing - 2 days

FIRE 0032 (Rescue Technician)

This is a basic Rescue Technician course that introduces the student to both the theoretical and practical aspects of rescue techniques. This course incorporates high angle rescue, confined space entry, and rescue and vehicle extrication techniques to meet NFPA 1006 standard.

Personal Protective Equipment; Rope and High Angle Rescue Equipment; Rappelling Techniques; Ascending Techniques; Rescue Techniques; Confined Spaces; Detection Equipment; Purging and Ventilating; Entry Procedures; Confined Space Rescue; Psychological Aspects of a Confined Space Rescue; Vehicle Construction; Extrication Equipment; Extrication Procedures; and Extrication Equipment Maintenance.

Prerequisites - FIRE 0027 (Emergency Medical Responder (80 hours)); FIRE 0011 (Firefighter I) OR Basic Fire Fighting Certificate; Medical Clearance according to MI policy

Duration - 20 days

Theory - 7.5 days

Practical - 12.5 days

FIRE 0034 (Firefighter II)

This course is designed to provide the student with the theoretical and practical training to function as an integral member of a firefighting team. It meets and/or exceeds National Fire Protection Association (NFPA) 1001 Professional Standards.

Building Construction; Rescue and Extrication; Water Supply; Fire Hose; Fire Streams; Fire Control; Fire Detection, Alarm and Suppression Systems; Protecting Fire Scene Evidence; Fire Department Communications; Fire Prevention and Public Fire Education; Live-Fire Scenario Training; Aerial Ladder Climb; Physical-Fitness Testing; Professional Development

Prerequisites - FIRE 0011 (Firefighter - Level I)

NOTE: Certification in NFPA 1001 Firefighter Level I is required only for those participants who intend to complete the NFPA 1001 Firefighter Level II certification testing.

Duration - 20 days

Lectures - 4 days

Practical Exercises - 4 days

NFPA Level II Testing - 2 days

Live-Fire Scenario Training - 6 days

Aerial Ladder Climb - 1 day

Physical Fitness Testing - 1 day

Professional Development - 2 days

FIRE 0035 (Hazardous Materials Operations)

This is an introductory level course designed to enable students to identify dangerous goods incidents and to properly respond to hazardous materials situations under the guidelines of Hazardous Materials Operations.

Chemical Properties and Hazardous Materials Behaviour, Incident Management; Strategic Goals and Tactical Objectives; Terrorist Attacks, Criminal Activities and Disasters; Personal Protective Equipment (PPE); Decontamination; Product Control; Air Monitoring and Sampling; Victim Rescue and Recovery; Evidence Preservation and Sampling; Illicit Laboratories

Prerequisite - FIRE 0036 (Hazardous Materials Awareness)

NOTE: To be certified to the NFPA 472 - Hazardous Materials Operations Level, successful completion of NFPA 472 Hazardous Materials Awareness is required.

Duration - 7.5 days (45 hours)

Theory - 5.5 days (33 hours)

Practical Exercises - 1 day (6 hours)

Testing - 1 day (6 hours)

FIRE 0036 (Hazardous Materials Awareness)

This is an introductory level course designed to enable students to identify dangerous goods incidents and properly perform isolation and evacuation procedures.

Introduction to Hazardous Materials; Hazardous Materials Identification; Awareness-Level Actions at Hazardous Materials Incidents

Prerequisite - Entry into the Fire Rescue Program

Duration - 2.5 days (17.5 hours)

Theory - 1.5 days (10.5 hours)

Practical Exercises - 0.5 days (3.5 hours)

Testing - 0.5 days (3.5 hours)

FIRE 0037M Technical Rescuer (Vehicle and Machinery Extrication Level I and II)

Level I:

This is a Technical Rescuer Course that introduces the student to both the theoretical and practical aspects of Vehicle and Machinery Extrication Techniques. This course incorporates Vehicle and Machinery Extrication and Core Skill (Chapter 5) Techniques to meet or exceed National Fire Protection Association (NFPA 1006) Professional Standards, Level I .

Level II:

This is a Technical Rescuer Course that introduces the student to the more advanced theoretical and practical aspects of extrication focusing on Heavy Vehicle and Machinery Extrication Techniques. This course incorporates Vehicle and Machinery Extrication Level II Core Skill Techniques to meet or exceed National Fire Protection Association (NFPA 1006) Professional Standards, Level II.

Level I:

Introduction to Vehicle and Machinery Extrication; Extrication Incident Management; Vehicle Anatomy and Science; Extrication Equipment; Extrication Techniques; Passenger Vehicle Extrication; Emergency Medical Services (EMS) Rescue Considerations

Level II:

Heavy Vehicle and Machinery Classification; Bus Extrication; Medium and Heavy Truck Extrication; Railcar Extrication; Industrial / Agricultural Vehicle and Machinery Extrication; Specialized Heavy Vehicle and Machinery Extrication; Heavy Vehicle and Machinery Incident Assessment; Hazards Associated with Heavy Vehicles and Machinery; Extrication Tools and Equipment for Heavy Vehicles and Machinery; Heavy Vehicle and Machinery Stabilization; Victim Removal from Heavy Vehicles and Machinery

Prerequisites - FIRE 0038M - Technical Rescuer (Rope Rescue Level I and II)

NOTE: For successful completion of NFPA 1006 Technical Rescuer - Vehicle Extrication Certification, students must have successfully completed certification in NFPA 1006 for CORE and also certification will not be received for Level II until successful completion of Vehicle and Machinery Extrication Level I.

Duration - Classroom - 5 days

Practical - 5 days

Total - 10 days

Please note that in addition to the 10 days duration above there will be a Complete Skills Review and NFPA Testing component to be shared among the three Technical Rescuer Courses (Rope Rescue, Confined Space and Vehicle Extrication) that will amount to another 10 days.

FIRE 0038M Technical Rescuer (Rope Rescue Level I and II)

Level I and II:

This is a Technical Rescuer Course that introduces the student to the theoretical, practical, and advanced aspects of Rope Rescue Techniques. This course incorporates the High Angle and Core Skill (Chapter 5) techniques to meet or exceed National Fire Protection Association (NFPA) 1006 professional standards, Levels I and II.

Level I:

Introduction to Rope Rescue; Incident Planning and Scene Management; Safety; Equipment and System Components; Knots; Anchor Systems; Belaying; Rappelling; Lowering Systems; Mechanical Advantages, Raising, and Ascending Systems

Level II:

Rappelling Operations; Lowering Systems; Mechanical Advantages; Raising, and Ascending Systems; Tensioned Rope Systems

Prerequisites - FIRE 0011 (Firefighter - Level I)

COURSE DESCRIPTIONS

NOTE: For successful completion of NFPA 1006 Technical Rescuer - Rope Rescue students must have successfully completed certification in NFPA 1006 for CORE and also certification will not be received for Level II until successful completion of Rope Rescue Level

Duration - Classroom - 5 days

Practical - 5 days

Total - 10 days

Please note that in addition to the 10 days duration above there will be a Complete Skills Review and NFPA Testing component to be shared among the three Technical Rescuer Courses (Rope Rescue, Confined Space and Vehicle Extrication) that will amount to another 10 days.

FIRE 0039M Technical Rescuer (Confined Space Rescue Level I and II)

Level I and II:

This is a Technical Rescuer Course that introduces the student to both the theoretical and practical aspects of Confined Space Rescue Techniques. This course meets or exceeds National Fire Protection Association (NFPA) 1006, Level I professional standards.

Level I:

Introduction to Confined Spaces; Confined Space Entry Requirements; Using the Incident Command System; Strategic Rescue Factors; Safety; Rescue Operations and Considerations; Air Monitoring; Ventilation and Inerting; Rescue Equipment; Team Evaluation

Level II:

Confined Spaces and Their Hazards; Confined Space Entry Requirements; Using the Incident Command System; Strategic Rescue Factors; Rescue Operations and Considerations; Air Monitoring; Ventilation and Inerting; Lockout / Tagout; Team Evaluation

Prerequisites - FIRE 0038M (Technical Rescuer (Rope Rescue Level I and II))

NOTE: Certification in NFPA 1006 Confined Space Entry Level I must be successfully completed before receiving certification in NFPA 1006 Confined Space Entry Level II

Duration - 5 days

Practical - 5 days

Total - 10 days

Please note that in addition to the 10 days duration above there will be a Complete Skills Review and NFPA Testing component to be shared among the three Technical Rescuer Courses (Rope Rescue, Confined Space and Vehicle Extrication) that will amount to another 10 days.

FIRE 0040 (Flashover Recognition)

This course provides theoretical and practical skills to enable students to recognize the signs of a flashover situation and be able to react accordingly for their personal safety.

Fire Development in a Compartment; Fire Control Theory; Flashover Safety

Prerequisites - FIRE0011 (Firefighter - Level 1)

Duration - 7 hours

Theory - 4 hours

Practical - 3 hours

FITE 0001 (Introduction to Fishing Gear Construction and Repair)

This course introduces participants to fishing gear construction and repair.

Introduction to Trawls; Basic Net Making Knowledge; Basic Net Repair; Application of Conservation Technologies; Mobile Gear Construction and Repair Techniques; Trawl Operations and Further Equipment; Net Making for Fixed Gears; Principles and Uses of Rope and Wire

Duration -10 days

FITE 0002 (Introduction to Construction and Stability for Fishing Vessels)

Fishing vessel construction and stability are important, interconnected areas of study to ensure the safe operation and handling of fishing vessels. It is essential that vessel operators have a good understanding of the relationships that exist between the vessels shape, builder's plans and how a completed hull operates in a marine environment. This course is specifically directed towards fishing vessel operators and deals with the basic theory and application of construction and stability as it applies to fishing vessels in various conditions of load

Basic Ship Measurement and Design Terminology; Hull Shapes and Structural Terminology; Vessel Seaworthiness and Regulatory Requirements; Essential Vessel Systems and Inspection Protocol; Basic Ship Stability Terminology; Basic Transverse Stability Principles; Interpreting Righting Lever Curves; Basic Longitudinal Stability Principles; Principles of Free Surface Effect, Freeboard and Reserve Buoyancy; Anti Roll Devices and Vessel Stability; Vessel Modifications and Its Effect on Stability; Interpreting Stability Booklet Data; Effect of Fishing Operations on Vessel Stability; Environmental Effects on Stability - The Dynamics

Duration - 10 Days (70 Hours)

FITE 0004 (Information Systems in Fisheries)

This course has been developed to enable the fish harvester to maximize the use of the computer at sea. This course includes distinct components of electronic navigation, managing fishing data, collision avoidance and communication.

The Windows® Operating System Environment; Electronic Navigational Chart ~ Definitions, Concepts and Related Authorities; Legal Aspects and Requirements for Fishing Vessels; Sensors and Interfaces; Electronic Chart Data; Navigating with the Electronic Charting System; Passage Planning with the Electronic Chart; Executing and Monitoring the Passage Plan; System Status Alarms and Indicators; Risk of Over-reliance; Fishing Data Management; Back-up Arrangements; Collision Avoidance Information Management; Bottom Mapping; Communications

Prerequisites - Chartwork and Pilotage _ Level 1 (C/P 1) or equivalent

Duration - 70 hours = 10 days

FITE 0005 (Ropework)

This course is designed to develop the participant's ability to understand the design and construction of various types of rope, maintenance and inspection of ropes, and regulations governing rope usage. It will include rope safety, rope use and maintenance for small vessels, and moorings and anchoring.

Ropes; Knots, Bends and Hitches; Ropework/Working with Ropes; Rope Safety; Mooring and Anchoring

Duration - 2.5 days

FLDS 1200 (Introduction to Fluid Mechanics & Hydraulics)

This course is designed as an introduction to the laws and principles that govern Fluid Mechanics and Hydraulics. Students will be able to apply these principles to relevant Electro-Mechanical applications.

Introduction to Fluid Mechanics: Work and Energy of Fluids in Motion, , Steady Flow of Ideal Fluids, Hydraulic Principles, Hydraulic System and Schematics, Hydraulic Fluids, Hydraulic Hoses and Pipes, Seals and Packing, Reservoir Design and Function, Contamination Control and Filtration, Linear Activators, Pumps and Motors, Directional Control Valves, Pressure Control Valves, Flow Control Valves, Hydraulic System Accessories, Troubleshooting

Prerequisites - PHYS 1100 (Physics) or PHYS 1101 (Physics) or PHYS 1102 (Physics)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week every second week for 6 labs = 12 hours.

FLDS 2100 (Fluid Mechanics)

This is an introductory Fluid Mechanics course designed to develop both the knowledge of the laws and principles governing Fluid Mechanics and the ability to apply this knowledge in analyzing related engineering applications. The course also provides a base for advanced courses in piping design, ducting design, and fluid power systems.

Introduction to Fluid Mechanics; Forces on Submerged Surfaces; Work and Energy of Fluids in Motion; Steady Flow of Incompressible Fluids; Flow Measurement

Prerequisites - MATH 1100 (Pre-Calculus) or MATH 1102 (Pre-Calculus); PHYS 1100 (Physics) or PHYS 1101 (Physics) or PHYS 1103 (Physics)

Duration - 13 weeks instruction, exclusive of final examination

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week every second week for 6 labs = 12 hours

FLDS 2105 (Fluid Mechanics)

This is an introductory Fluid Mechanics course designed to develop both the knowledge of the laws and principles governing Fluid Mechanics and the ability to apply this knowledge in analyzing related engineering applications. The course also provides a base for advanced courses in piping design, ducting design, and fluid power systems.

Introduction to Fluid Mechanics; Forces on Submerged Surfaces; Work and Energy of Fluids in Motion; Steady Flow of Incompressible Fluids; Flow Measurement

Prerequisites -MATH 1100 (Pre-Calculus) or MATH 1102 (Pre-Calculus); PHYS 1100 (Physics) or PHYS 1101 (Physics) or PHYS 1103 (Physics)

Duration - 13 weeks instruction, exclusive of final examination

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week every second week for 6 labs = 12 hours

FLDS 2106 (Introduction to Fluid Statics & Dynamics)

This course is designed as an introduction to the laws and principles that govern Fluid Mechanics. Students will be able to apply these principles to relevant ROV applications.

Introduction to Fluid Mechanics; Forces on Submerged Surfaces; Buoyancy, Forces due to Fluids in Motion, Drag

Duration - 3 weeks

Lectures - 6 hours/week = 18 hours total

Laboratories - 1 hour/week = 3 hours total

FLDS 2107 (Hydraulic Controls)

This is an intermediate level course designed for students in the Remotely Operated Vehicles Operator Program.

Hydraulic Principles; Hydraulic Systems and Schematics; Hydraulic Fluids; Hydraulic Hoses and Pipes; Seals and Packing; Reservoir, Design and Function; Contamination Control and Filtration; Linear Activators; Pumps and Motors; Directional Control Valves; Pressure Control; Flow Control; Hydraulic System Accessories

Duration - 10 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

FLDS 2108 (Introduction to Fluid Statics, Dynamics & Hydraulics)

This course is designed as an introduction to the laws and principles that govern Fluid Mechanics and Hydraulics. Students will be able to apply these principles to relevant ROV applications.

Introduction to Fluid Mechanics; Forces on Submerged Surfaces; Buoyancy and Stability; Forces due to Fluids in Motion; Drag; Hydraulic Principles; Hydraulic System and Schematics; Hydraulic Fluids; Hydraulic Hoses and Pipes; Seals and Packing; Reservoir Design and Function; Contamination Control and Filtration; Linear Activators; Piston Pumps and Motors;

COURSE DESCRIPTIONS

irectional Control Valves; Pressure Control; Hydraulic System Accessories.

Co-requisite - PHYS 1100 (Physics) or PHYS 1101 (Physics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours/biweekly = 12 hours

FLDS 2201 (Marine Hydraulics)

This intermediate course is designed to provide Marine Engineering Systems Design students with the engineering knowledge needed to analyze hydraulic installations, specify components, and design shipboard hydraulic systems.

Principles of Power Hydraulics, Hydraulic Fluids and Reservoirs, Hydraulic Piping and Fittings, Seals and Packing, Components of Hydraulic Systems, Hydraulic Pumps and Motors (Rotary Actuators), Marine Applications of Hydraulics

Prerequisite - ENSY 1202 (Introduction to Marine Engineering Systems Design); PHYS 1200 (Physics), FLDS 2100 (Fluid Mechanics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week every second week for 6 labs = 12 hours

FLDS 3100 (Hydraulics and Pneumatics)

This is an intermediate level course designed primarily for students in the Marine Engineering Technology program

Hydraulic Principles; Hydraulic System and Schematics; Hydraulic Fluids; Hydraulic Hoses and Pipes; Seals and Packing; Reservoir, Design and Function; Contamination Control and Filtration; Linear Activators; Pumps and Motors; Directional Control Valves; Pressure Control; Flow Control; Hydraulic System Accessories; Pneumatic Principles; Air Compressors and Receivers; Air Distribution and Auxiliary Equipment

Prerequisite - PHYS 1100 (Physics) or PHYS 1101 (Physics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

FLDS 3105 (Hydraulics and Pneumatics)

This is an intermediate level course designed primarily for students in the Marine Engineering Technology program.

Hydraulic Principles; Hydraulic System and Schematics; Hydraulic Fluids; Hydraulic Hoses and Pipes; Seals and Packing; Reservoir, Design and Function; Contamination Control and Filtration; Linear Activators; Pumps and Motors; Directional Control Valves; Pressure Control; Flow Control; Hydraulic System Accessories; Pneumatic Principles; Air Compressors and Receiver; Air Distribution and Auxiliary Equipment

Prerequisite - PHYS 1103 (Physics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

FLDS 3106 (Introduction to Fluid Statics & Dynamics)

This course is designed as an introduction to the laws and principles that govern Fluid Mechanics. Students will be able to apply these principles to relevant ROV applications.

Introduction to Fluid Mechanics; Forces on Submerged Surfaces; Buoyancy, Forces due to Fluids in Motion, Drag

Duration - 3 weeks

Lectures - 6 hours/week = 18 hours total

Laboratories - 1 hour/week = 3 hours total

FLDS 3107 (Hydraulic Controls)

This is an intermediate level course designed for students in the Remotely Operated Vehicles Operator Program.

Hydraulic Principles; Hydraulic Systems and Schematics; Hydraulic Fluids; Hydraulic Hoses and Pipes; Seals and Packing; Reservoir, Design and Function; Contamination Control and Filtration; Linear Activators; Pumps and Motors; Directional Control Valves; Pressure Control; Flow Control; Hydraulic System Accessories

Duration - 10 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

FRMG 0001 (Fisheries Resource Management)

This course is designed to familiarize fishers with the principles and techniques involved in fisheries management.

The Fishery Resource; Why Manage? Understanding the Goals of Fisheries Management; The Methods Employed in Fisheries Management; Managing Our Resources; Agencies and Organizations Involved in Research and Decision-making in Fisheries Resource Management; Sharing Our Resources – Foreign Fishing in the Northwest Atlantic; Responsible Fishing; Owner Operation/Fleet Separation; Stewardship

Duration - 5 days

GEOG 1300 (Surveying and GPS)

This course is designed to provide students with an understanding of survey techniques. It will introduce students to measurement techniques associated with distance, direction and leveling. It will review traditional survey tools as well as electronic devices including total stations and global positioning systems. Also, students operate surveying equipment that is commonly used for coastal and marine applications.

Introduction to Surveying; Distance Measurements and Corrections; Leveling; Angles and Directions; Global Positioning System (GPS); Electronic Distance Measurement Instruments (EDMs)

Duration - 5 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

GEOG 2100 (Geography)

This course is designed to provide the student with an understanding of the types and uses of maps for use by marine environmental technologists. It also introduces students to calculations from maps and provides them with an introduction to digital mapping techniques, namely Geographic Information Systems (GIS) and Remote Sensing

Introduction to Map Use; Projections and Coordinates; Map Scale and Calculations; Spatial Analysis and GIS; Remote Sensing and Aerial Photography

Prerequisite - None

Duration - 13 weeks

Lectures - 3 hours /week

Laboratories - 1 hour/week

GEOG 3101 (Mapping and GIS)

This course is designed to introduce the student to the application of maps in environmental problems. Computer based applications such as Geographic Information Systems and their use are emphasized.

Background to Maps; Digital Mapping Data Models; Extraction and Application of Data from Maps; Geographic Information Systems; and Recent Trends in Geographic Information Systems

Prerequisite - GEOG 1300 (Surveying and GPS) **OR** GEOG 2100 (Geography)

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

Laboratories - 3 hours once per week = 39 total hours

GEOG 3102 (Geographic Database Design and Management)

This course provides the student with an introduction to the theoretical, technical, and practical application of geographic databases through the design, implementation, generation, dissemination and management of geospatial data in tabular format. The course will be taught using modern equipment and methodologies, allowing the student to better understand the benefits and limitations associated with the utilization, evaluation and optimization of geographic database design and management techniques and workflows.

Introduction to Databases; Introduction to Geodatabases; Database Management System Environments; Geographic Database Design; Database Design Tools; Database Models; Database Integration; Geodatabase Application Development; Geographic Database Management; Recent Trends in Geographic Database Design and Management

Prerequisite - CPSK 1102 (Introduction to Applied Programming); GEOG 3101 (Mapping and GIS)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours oncer per week = 26 hours

GEOG 3103 (Advanced Remote Sensing)

This course provides the student with a background in advanced remote sensing practises in relation to operational satellite oceanography. The course will be taught using modern equipment and methodologies, allowing the student to better understand the uses of remote sensing in the extraction of oceanographic parameters. It will combine both theoretical and practical methods to reach the major objectives of both course and Program.

Multispectral Remote Sensing; Ocean Surface Phenomena; Atmospheric Properties and Radiative Transfer; The Atmosphere/Ocean Interface; Ocean Color; Sea Surface Temperature (SST); Microwave Remote Sensing; Introduction to Radars; Scatterometer Observations; The Altimeter; Imaging Radars

Prerequisite - GEOG 3200 (Remote Sensing)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratory - 2 hours/week = 26 hours

GEOG 3200 (Remote Sensing)

This course will provide an introduction to remote sensing technologies, examining the electro-magnetic spectrum, acoustic remote sensing, multi-spectral remote sensing, and image analysis. It will review the principles of data processing and the use of remote sensing in the coastal and marine environmental areas.

Introduction to Remote Sensing (RS); Electro-Magnetic Radiation; Multi-spectral Remote Sensing; Acoustic Remote Sensing in Water; Image Processing and Data Validation

Prerequisite - GEOG 3101 (Mapping and GIS)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratory - 3 hours/week = 39 hours

GEOG 3201 (Advanced Surveying Practices)

This course will introduce the student to advanced survey methods and specialized hydrographic techniques. Building on the students' knowledge of standard survey practices the student will learn the principles and practical applications of; advanced GPS techniques, acoustic and alternative positioning methods, laser scanning and optical laser hydrographic surveys.

Review of Positioning Concepts; Advanced GPS Positioning Techniques; Review of Acoustic Principles; Acoustic Positioning Applications; Alternative Positioning Methods; Light Detection And Ranging (LIDAR) Theory; Light Detection And Ranging (LIDAR) Applications; Future Positioning Methods

Prerequisite - GEOG 1300 (Surveying and GPS); or equivalent; OMAP 2000 (Underwater Acoustic Applications); or equivalent

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours/week = 26 hours

COURSE DESCRIPTIONS

GEOG 3202 (Web-based Mapping)

This course provides the student with an introduction to the theoretical, technical, and practical application of web-based mapping through the design, implementation, generation and dissemination of geospatial data on the World Wide Web. The course will be taught using modern equipment and methodologies, allowing the student to better understand the benefits and limitations associated with the utilization, evaluation and optimization of web-based mapping techniques and workflows.

Introduction to Web-based Mapping; Technical Aspects of Web-based Mapping; Web-based Mapping Development Environments; Web Programming; Geospatial Web Services; Geospatial Mashups; Mobile GIS; Geoportals; Spatial Data Infrastructure and the Web 2.0; Recent Trends in Web-based Mapping

Prerequisite - GEOG 3102 (Geographic Database Design and Management)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hours/week = 26 hours

GEOG 3401 (Nautical Chart Production)

This course provides the student with an introduction to the theoretical, technical and practical application of paper and electronic navigational chart production techniques and best practices. The course will be taught using high-level equipment and methodologies, allowing the student to better understand the benefits and limitations associated with this technology from a compilation, production, dissemination and management perspective.

Introduction to Nautical Charts; Fundamentals of Nautical Charts; Paper Nautical Chart Production; Electronic Navigational Chart Production; Nautical Chart Corrections; Nautical Chart Data Management; Future Trends in Nautical Chart Production

Prerequisite - GEOG 3102 (Geographic Database Design and Management)

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

Laboratories - 3 hours once per week for 10 weeks (starting in week 2) = 30 total hours

GEOG 4100 (Remote Sensing)

This course will provide an introduction to remote sensing technologies, examining data collection and processing methodologies. It will review the principles of data processing and the use of remote sensing in coastal zone and water quality problems.

Introduction to Remote Sensing (RS); Airborne Systems; Space Based Platforms; RADARs; Data Acquisition and Analysis; Underwater Acoustic Technologies; Applications

Prerequisite - None

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 3 hours/week

GEOG 4103 (Aquatic Systems)

This course is an introductory course covering the fundamentals of hydrology, oceanography and limnology and will provide the student with an understanding of the processes and applications of each discipline.

Introduction to Water Resources; Runoff; Groundwater; Evaporation and Transpiration; Streamflow; Anthropogenic Case Studies

Lectures - 39 hours (3 hours per week)

Laboratories - 26 hours (2 hour lab per week)

GEOG 4200 (Geographic Information Systems)

This course is designed to provide the participants with an introduction to general map use and application as well as outline of the opportunities and limitations of the use of Geographic Information Systems (GIS) in the fields of Water Quality and Integrated Coastal and Ocean Management.

Background to Maps, Digital Mapping Data Models, Geographic Information System; Basic Functions of GIS; Data Quality Evaluation; Recent Trends in GIS

Prerequisite - None

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Practical Exercises/Laboratories - 3 hours/week = 39 hours

GEOG 4300 (Applied GIS and Remote Sensing)

This course is designed to provide the participants with hands on application of data collection and analysis of remote sensing and Geographic Information Systems (GIS) data in various projects directly related to integrated coastal and ocean management.

Coastal and Ocean Management Case Studies; Data Requirements of Problem Resolution; Flow Charting Existing Problems and Development of Applicable Work Flow Models

Prerequisite - GEOG 4100 (Remote Sensing); GEOG 4200 (Geographic Information Systems)

Duration - 5 weeks (20 hours)

Practical Exercises/Lab - 4 hours/week

GEOG 4301 (Applied GIS and Remote Sensing for Water Quality)

This course is designed to provide the participants with the hands-on application of data collection, processing, analysis and dissemination of remote sensing and Geographic Information Systems (GIS) data as it relates to current issues and trends in water quality and wastewater management.

Spatial and Temporal Patterns in Water Resources; Data Requirements for Problem Resolution; Practical Application in Resource Management

Prerequisite - GEOG 4100 (Remote Sensing); GEOG 4200 (Geographic Information Systems)

Duration - 5 weeks

Lectures - None

Laboratory - 4 hours/week (Two 2-hour labs/week)

GEOG 4302 (GIS and Remote Sensing for Integrated Coastal and Ocean Management)

This course is designed to provide the participants with the hands-on application of data collection, processing, analysis and dissemination of remote sensing and Geographic Information Systems (GIS) data as it relates to current issues and trends in integrated coastal and ocean management.

Spatial and Temporal Patterns in Integrated Coastal and Ocean Management; Data Requirements for Problem Resolution; Practical Application in Resource Management

Prerequisite - Geography 4100 (Remote Sensing); Geography 4200 (Geographic Information Systems)

Duration - 5 weeks (20 hours)

Lectures - None

Laboratory - 4 hours/week (Two 2-hour labs/week)

MARP 0001(Fishing Vessel Hull Repair and Maintenance - Fibreglass)

This course is designed to provide harvesters with knowledge and basic skills in the proper maintenance of the hull of their vessels. It focuses on the use of fibreglass material for the repair and maintenance of the hull of fibreglass fishing vessels.

Hull Maintenance; What is Fibreglass?; The Fibreglass Process; Safety; Fibreglass Sheathing of Wooden Boats; Applying the Laminate; Fibreglass Boat Repairs; Modifications

Pre-requisites - SFTY 1104 (WHMIS)

Duration - 1 Week (35 hrs)

MARP 0002 (General Fishing Vessel Maintenance)

This course is designed to give students basic knowledge and necessary skills to maintain their fishing vessel.

Vessel Lay-up; Deck Equipment Maintenance Procedures; Engine Room Maintenance; Wheelhouse, Galley, and Accommodations Maintenance; Outboard Motor and Battery Maintenance; Engine / Shaft Alignment; Basic Hydraulic Systems and Maintenance; General Maintenance for Fishing Methods; General Maintenance Log Book

Pre-requisite - None

Duration - 2 weeks (10 days)

MATH 0102 (Mathematics)

This basic course is designed to help alleviate specific weaknesses in the student's basic mathematical skills.

Whole Numbers and Decimal Numbers; Fractions; Scientific Notation; Percentage; Linear Equations and Formula Manipulations; SI Units and Imperial Units

Duration - 13 weeks

Lectures - 3 one-hour classes/week

MATH 0103 (Mathematics)

This course is designed to ensure students have a solid foundation in basic mathematics and related concepts. Topics covered will assist students in better understanding concepts encountered in other courses.

Whole Numbers; Decimal Fractions; Common Fractions; Percentages; Angular Measurement; Introduction to SI Units; Perimeters; Areas; Volumes; Practical Applications

Duration - 10 weeks (30 hours)

Lectures - 3 hours/week

MATH 0112 (Mathematics)

This is a course designed to ensure that students have a solid foundation in basic mathematics and related concepts. The topics covered will assist students to understand the technical material encountered in other courses.

Whole Numbers; Common Fractions; Decimal Fractions; Percents; Ratio and Proportion; Angle Measure

Prerequisite - None

Duration - 13 weeks

Lectures - 2/0 hours per week

MATH 0200 (Mathematics)

This introductory course is designed to strengthen the student's technical and mathematical skills and to enhance their problem solving ability; therefore, providing them with a solid foundation for a career as a marine mechanic.

Applied Linear Measure; Applied Area Measure; Applied Volume and Surface Area; Ratio and Proportion; and Shop Formulas

Prerequisite - MATH 0102 (Mathematics)

Duration - 13 weeks

Lectures - 3 hours/week

MATH 0201 (Mathematics II)

This course is designed to strengthen technical and mathematical skills and to enhance problem-solving ability, thereby providing students with a solid foundation for a career in offshore steel fabrication.

Linear Equations and Formula Manipulation; SI Units; Applied Linear Measure; Applied Angle Measure; Applied Volume and Surface Area Measure; Volume, Mass and Capacity Equivalencies; Bending Metals

Prerequisite - MATH 0112 (Mathematics I)

Duration - 13 weeks

Lectures - 3/0 hours per week

MATH 1100 (Pre-Calculus)

This is a course in pre-calculus mathematics designed to help alleviate specific weaknesses in students' mathematical skills and thereby increase their chances for success in other technical courses.

Review of Fundamental Algebra; Trigonometric Functions; Operations Involving Algebraic Expressions; Operations Involving Fractional Algebraic Expressions Exponents and Radicals:

COURSE DESCRIPTIONS

The Quadratic Formula; Logarithms; Systems of Linear Equations and Determinants.

Prerequisite - Completion of Advanced Mathematics 3201 or Academic Mathematics 3203 as determined by the Department of Education, or an equivalent.

Duration - 13 weeks

Lectures - 6 hours/week for a total of 78 hours

MATH 1101 (Introduction to Calculus)

This is a course designed to prepare students for the study of calculus as well as to introduce them and give them a facility with the concepts of differentiation necessary for a better understanding of a variety of technology courses.

Functions; Analytic Geometry; Trigonometry; Algebraic Operations and Complex Numbers; The Derivative.

Prerequisite - Diagnostic Test or MATH 1100 (Pre-Calculus)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total **OR**

Duration - 8 weeks

Lectures - 8 hours/week for a total of 64 hours

MATH 1102 (Pre-Calculus)

This is a course in pre-calculus mathematics designed to improve students' mathematical skills and thereby increase their chances for success in other technical courses.

Review of Fundamental Algebra; Trigonometric Functions; Operations Involving Algebraic Expressions; Operations Involving Fractional Algebraic Expressions; Exponents and Radicals; The Quadratic Formula; Logarithms; Systems of Linear Equations, Determinants and Matrices.

Prerequisite - Successful completion of high school level III advanced or academic mathematics or equivalent.

Duration - 13 weeks

Class Hours - 6 hours/week

MATH 1103 (Introduction to Calculus)

This is a course designed to prepare students for the study of calculus and give them a facility with the concepts of differentiation and integration necessary for a better understanding of a variety of technology courses.

Functions; Algebraic Operations and Complex Numbers; Trigonometry; The Derivative; Introduction to Integration

Prerequisite - Successful completion of MATH 1102 (Pre-Calculus)

Duration - 13 weeks

Lectures - 6 hours/week

MATH 1105 (Introduction to Calculus)

This is a course designed to prepare students for the study of calculus as well as to introduce them and give them a facility with the concepts of differentiation necessary for a better understanding of a variety of technology courses.

Functions; Analytic Geometry; Trigonometry; Algebraic Operations and Complex Numbers; The Derivative

Prerequisite - Successful completion of MATH 1100 (Pre-Calculus), or

A grade of 70% or better in high school Advanced Mathematics 3201, or

A pass in Advanced Mathematics 3201 or Academic Mathematics 3203 plus successful completion of a diagnostic testing procedure administered upon entry into first year.

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MATH 1112 (NASC Mathematics I)

This is a course in pre-calculus mathematics designed to help alleviate specific weaknesses in students' fundamental mathematical skills and thereby increase their chances for success in the Nautical Science technology program.

Review of Fundamental Algebra; Trigonometry; Vectors; Operations Involving Algebraic Expressions; Quadratic Equations; Exponents and Radicals; Systems of Linear Equations; Analytical Geometry

Duration - 13 weeks

Lectures - 6 hours/week for a total of 78 hours

MATH 1200 (Calculus)

In this course students will study topics in differential calculus and will also be introduced to integral calculus. Topics covered will assist students to better understand concepts encountered in other courses.

Curve Sketching; Transcendental Functions and Their Derivatives; Applications of the Derivative; Differentials; Introduction to Integration; The Definite Integral; Further Applications of Indefinite and Definite Integrals

Prerequisite - MATH 1101 (Introduction to Calculus)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total **OR**

Duration - 8 weeks

Lectures - 8 hours/week for a total of 64 hours

MATH 1212 (NASC Mathematics II)

This is a course comprised of a variety of topics designed to meet specific needs of the Nautical Science Diploma Program.

Mensuration; Ratio, Proportion, and Linear Interpolation; Geometry; Moments and Centre of Gravity; Simpson's Rules; Trigonometric Graphs and Identities; Spherical Trigonometry; Statistics

Prerequisite - Successful completion of MATH 1111 or MATH 1112

Duration - 13 weeks

Lectures - 6 hours/week for a total of 78 hours

MATH 2101 (Advanced Calculus)

This is primarily an applied calculus course designed to meet the specific requirements of various technology and degree programs.

Integration Techniques; Applications of Integration; Double Integration; Differential Equations

Prerequisite - MATH 1200 (Calculus) or equivalent

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MATH 2102 (Mathematics)

This is a course comprised of a variety of topics designed to meet specific needs of the Nautical Science Diploma program.

Formula Manipulation; Mensuration; Geometric Construction; Interpolation; Moments; Trapezoidal Rule; Simpson's Rule; Spherical Trigonometry

Prerequisite - MATH 1100 (Pre-Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

MATH 2203 (Linear Algebra)

This is an introductory linear algebra course covering basic concepts including matrices, determinants, Euclidean and general vector spaces, eigenvalues and eigenvectors.

Systems of Linear Equations and Matrices; Determinants; Euclidean Vector Spaces; General Vector Spaces; Eigenvalues and Eigenvectors

Prerequisite - Math 1200 (Calculus) or equivalent

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MECH 1100 (Mechanics)

This course provides the fundamental concepts required for the analysis of basic engineering problems and builds on the principles introduced in previous physics courses. Students are introduced to elements of statics and dynamics appropriate for a first course for technicians studying marine engineering.

Analysis of Force Systems; Principal of Moments; Equilibrium; Analysis of Trusses and Machines; Friction; Centroids, Moments of Area, and Moments of Inertia; Kinematics of Rigid Bodies; Plane Motion; Kinetics of Rigid Bodies; Work, Power, and Energy; and Simple Machines

Prerequisites - MATH 1100 (Pre-Calculus) or MATH 1102; PHYS 1100 (Physics) or PHYS 1101 (Physics)

Duration - 13 weeks

Lectures - 4 hours/week

Labs - 2 hours/week every second week for 6 labs = 12 hours

MECH 1101 (Mechanics)

This course provides the fundamental concepts required for the analysis of basic engineering problems and builds on the principles introduced in previous physics courses. Students are introduced to elements of statics and dynamics appropriate for a first course for electro-mechanical technicians.

(Statics) - Analysis of Force Systems; Principal of Moments; Equilibrium; Friction; (Dynamics) - Kinematics of Rigid Bodies; Plane Motion; Kinetics of Rigid Bodies; Work, Power, and Energy; Simple Machines

Prerequisites - MATH 1102 (Pre-Calculus) or MATH 1101 (Introduction to Calculus); PHYS 1100 (Physics)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 2 hours/2 week period

MECH 2100 (Machine Design)

This course is an introduction to the primary considerations in the design of machines as they relate to each other, to their operators and to the environment. Machines will be seen as converters of energy and as the extension of human power. The composition and characteristics of machines will be presented and the underlying principles of mechanics of machines and strength of materials demonstrated, thus enabling the student to design machinery supplemented by practical manufacturing exposure and experience.

Nature and Composition of Machines; The Many Aspects of Machine Design; Design for Strength; Belt Drives and Band Brakes; Friction Clutches; Gear Trains; Cam Design; Detachable Fasteners; Springs

Prerequisites - MECH 1101 (Mechanics) or MECH 1100 (Mechanics); MTPR 2101 (Strength of Materials)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

MECH 2102 (Mechanics)

This is a foundation course that provides the fundamental concepts required for the understanding and development of basic engineering sciences, and builds on the principles developed in Physics 1100. This first course in mechanics concentrates on the all important concepts of statics.

Statics of Particles, Force Systems and Their Equivalents; Statics of Rigid Bodies; Rigid Bodies in Space; Centroids and Centres of Gravity; Analysis of Frames and Machines; Friction; Second Moments of Area and Moments of Inertia

Prerequisite - PHYS 1100 (Physics); MATH 1100 (Mathematics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

MECH 2110 (Mechanics)

This is a foundation course that provides the fundamental concepts required for the understanding and development of basic engineering sciences, and builds on the principles developed in PHYS 1100 (Physics). This first course in mechanics concentrates on the all important concepts of statics.

Statics of Particles, Force Systems and Their Equivalents; Statics of Rigid Bodies; Rigid Bodies in Space; Centroids and Centres of Gravity; Analysis of Frames and Machines; Friction; Second Moments of Area and Moments of Inertia

Prerequisite - MATH 1100 (Pre-Calculus); PHYS 1100 (Physics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 1 hour/week = 13 hours

COURSE DESCRIPTIONS

MECH 2111 (Statics and Dynamics)

This course provides the fundamental concepts required for the analysis of basic engineering problems and builds on the principles introduced in previous physics courses. Students are introduced to elements of statics and dynamics appropriate for a first course for technicians studying marine engineering.

Analysis of Force Systems; Principle of Moments; Equilibrium; Friction; Centroids, Moments of Area, and Moments of Inertia; Kinematics of Rigid Bodies; Plane Motion; Kinetics of Rigid Bodies; Work, Power, and Energy

Prerequisite - MATH 1105 (Introduction to Calculus); PHYS 1103 (Physics)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours

Laboratories - 2 hours/week every second week for a total of 6 labs = 12 hours

MECH 2201 (Mechanics)

This second course in mechanics introduces the fundamental concepts of dynamics and builds on the basic principles of statics presented in Mechanics 2102. The two course sequence is a basic requirement for the analysis of engineering problems, and for understanding the design principles of various machines and mechanisms.

Dynamics of Particles; Dynamics of Rigid Bodies; Mechanical Vibrations

Prerequisite for students prior to September 2004 - MECH 2102

Prerequisite for students as of September 2004 - MECH 2110

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 6 experiments

MECH 3100 (Theory of Machines)

This course develops and expands the principles and theories of basic engineering mechanics which are necessary for the design and understanding of various common mechanisms for standard mechanical engineering applications.

Velocity and Acceleration Diagrams; Crank and Effort Diagrams and Flywheel Design; Governors; Balancing of Rotating Masses; Gyroscopes; Belt Drives and Band Brakes; Friction Clutches; Gear Trains; Cam Design; Transverse Vibration of Beams; Whirling of Shafts

Prerequisite for students prior to September 2004 - MECH 2201 (Mechanics)

Co-requisite for students prior to September 2004 - MATH 2101 (Mathematics)

Prerequisite for students as of September 2004 - MECH 2201 (Mechanics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 6 experiments

MENV 1100 (Sampling I)

This course will provide students with basic sampling skills to conduct oceanographic and intertidal sampling programs. Students will conduct practical laboratory and field exercises designed to complement the theoretical course content.

Importance of Ocean and Coastal Processes; Skill Sets of Marine Researchers; Introduction to Sampling ; Physical Oceanography; Chemical Oceanography; Biological Sampling

Duration - 5 days (35 hours)

MENV 1101 (Industry Visitation)

This course will provide an overview of the environmental industry on a local, national, and global scale. Academic and professional standards will be discussed for the environmental sector and local visitation to industry will occur.

Production Industries; Service Industries; Environmental Regulations; Professional Associations; Industry Visitation

Duration - 35 hours

MENV 2100 (Marine Environment)

This is an introductory course to environmental science and some of the major environmental issues. Emphasis is placed on causes and effects of marine pollutants.

Environmental Citizenship; Major Environmental Issues; Ocean Users and Uses; Marine Pollution; and Case Studies

Prerequisite - CHEM 1100 (Chemistry) or CHEM 1101 (General Chemistry I)

Co-requisite - BIOL 1100 (Biology)

Duration - 13 weeks

Lectures - 39 hours (3 hours/week)

MENV 2101 (Dynamics of Marine Pollution)

This is an introductory course of the mechanisms involved in the movement of pollutants in the marine environment. This includes oil and chemical spills and also the spread of pollution from land based sources.

Properties; Priority Pollutants; Spill Behaviour in the Marine Environment; Environmental Factors; Introduction to Pollution Response; Effluent Plume Dispersion; Limnology; Open Channel Flow; Offshore Exploration and Production (Oil and Gas)

Prerequisite - CHEM 1100 (Chemistry) or CHEM 1101 (General Chemistry I)

Duration - 13 weeks

Lectures - 3 hours/week

MENV 2102 (Marine Sampling)

This course will provide the students with the practical skills necessary to plan and conduct a basic marine sampling program. The course is one week in duration and will be delivered through a series of laboratories and practical exercises. Students will spend 1.5 days going through sampling procedures at sea, 1.5 days performing biological analysis of specimens and two days looking at cruise planning and equipment care and maintenance. Students will document all field work in a journal which will be submitted for evaluation.

Introduction to Marine Sampling; Basic Sampling Tools; Cruise Planning; Oceanographic Sampling; Environmental Observations; and Biological Sampling

Prerequisites - BIOL 1100 (Biology); CHEM 1200 (Chemistry) or CHEM 1201 (General Chemistry I)

Duration - 5 days

MENV 2103 (BASIC OIL SPILL RESPONDER)

This is an entry-level course that will provide participants with basic knowledge and skills in oil spill response. Canada Shipping Act: Marine Oil Spill Response Capability; Basic Properties of Petroleum & its Hazards; Personal, Site &

Equipment Safety; Oil Spill Containment and Protection Techniques; Introduction to Spill Behavior; Introduction to Spill Assessment; Sampling; Recovery Techniques & Systems; Sorbents; Transfer, Storage & Disposal; Shoreline Cleanup Techniques; Oiled Wildlife Recovery & Treatment; Public Relations.

Duration - 35 hours

Theory - 20 hours

Practical - 15 hours

MENV 2300 (Environmental Applications of Industrial Hygiene)

This course is designed to familiarize participants with the principles and techniques involved in industrial hygiene practices. Defining Industrial Hygiene; Indoor Environmental Investigation;

Ventilation; Defining Workplace Hazards; Source Control; Defining Workplace Ambiance; Legislative Authorities Controls; Investigating Workplace Complaints

Duration (DU) - 13 weeks

Lectures (LC) - 2 hours per week = 26 total hours

MENV 2301 (Fisheries Conservation Technologies)

An introduction to global marine fisheries, fisheries management and conservation measures in fisheries.

Global Fisheries; Managing Fisheries; Domestic Regulatory Framework; Fisheries Impacts; Fisheries Conservation

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours total

MENV 3101 (Marine Environmental Seminar)

This course will present selected topics of relevance to the marine environment as well as land based pollution sources. The format will consist of presentations by faculty and invited speakers.

Air Pollution; Solid Waste Management; Pollution Control; Marine Protected Areas; Pollution Cleanup Technology; Environmental Policy; Environmental Biology; Environmental Assessment and Audit; and Bioremediation

Duration - 13 weeks

Lectures - 3 hours/week

MENV 3102 (Fundamentals of Coastal Zone Management)

This course is designed to familiarize participants with the multidisciplinary nature of the elements involved in Coastal Zone Management and the complexity of their interactions. It will also provide an overall review of the program rationale, particularly the three phases: description, analysis and synthesis that constitute the basis for the Coastal Zone Management Program.

Land/Ocean/Atmosphere Interface; Coastal Ecosystems; Production Economy; Social Ecology; Coastal Technologies; Environmental Hazards; Multiple User Conflicts; Legal Issues; and Integrated Coastal Zone Management

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4100 (Introduction to Coastal Zone Management)

This course is designed to familiarize participants with the multidisciplinary nature of the elements involved in CZM and the complexity of their interactions. It will also provide an overview of the program rationale, particularly the three phases: description, analysis and synthesis that constitute the basis for CZM.

Introduction to the Coastal Zone; The Coastal Systems; Coastal Zone Protection; Development in Coastal Zone; Environmental Hazards; Multiple User Conflict; Integrated Coastal Zone Management; Conceptual Framework for Integrated Coastal Zone Management; Coastal Zone Management Programs

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4103 (Human Ecology)

This course provides the conceptual backgrounds on social aspects that will be utilized in the foregoing Conflict Resolution Skills course. It is designed for coastal zone managers involved with problems related to present development issues of coastal communities.

The course will review the historical background of human settlement in the coastal zones and the influence of the marine environment and the ocean in the social structure of coastal communities. It will also examine and discuss the impact of human activities in the use and further deterioration of the coastal environment.

COURSE DESCRIPTIONS

Historical Review of the Human Colonization of the Coastal Zones; The Influence of Industrial Society on Coastal Zone; Present and Future uses of the Coastal Zones; The Role of Coastal Communities in the Management of the Coastal Zone.

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4105 (Coastal Resources)

This course will introduce participants to the concept of Coastal Ecosystem, Natural Resource, Ecological balance and Ecosystem dynamics. It describes the various types of coastal ecosystems and its main components. The main objective will be to provide participants with a multi-sectoral perspective of the different types of resources available in the coastal zones.

Basic Ecological Principles; Classification of Marine Environments; Adaptive Strategies of Intertidal Organisms; Diversity of the Intertidal Zone; Concept of Marine Resources; Living Resources; Mineral and Energetic Resources; Coastal Space as Resource; Resource Valuation and Decision Making

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4106 (Human Ecology)

This course provides the conceptual background on social aspects that will be utilized in the Conflict Resolution and Resource Management courses. It is designed for coastal managers who are involved in community resource development. The course will provide an overview of human interactions from the individual, the family and the community. Historic and cultural resource exploitation in the coastal area is examined.

The Individual; Group Dynamics; Societal Structures; Institutions and Governance; Ethics and Culture; Managing Coastal Areas

Duration - 13 weeks

Lectures - 39 hours (3 hours/week)

MENV 4107 (Introduction to Integrated Coastal and Ocean Management)

This course is designed to familiarize participants with the multidisciplinary nature of the elements involved in Integrated Coastal and Ocean Management (ICOM) and the complexity of their interactions. It will also provide an overview of the program rationale, particularly the three phases: description, analysis and synthesis, which constitute the basis for ICOM.

Introduction to the Coastal Zone; The Basic Principles of Integrated Coastal and Ocean Management; The Global Growth and Evolution of Integrated Coastal and Ocean Management; Development in the Coastal Zone; Conceptual Framework for Integrated Coastal and Ocean Management; Integrated Coastal and Ocean Management and Planning Methods; Integrated Coastal and Ocean Management Programs

Duration - 39 hours

Lecture - 3 hours per week

MENV 4200 (Environmental Management)

This course will elaborate on the conceptual elements described in the basic course Coastal Resources and Coastal Resource Management to provide the participants with an overall view of the methods used to assess the status of the coastal environment and the impact of Man activities on the natural environment. It will also review examples of environmental legislation and protective measures.

Environmental Carrying Capacity; Environmental Impact Assessment; UNCED- Agenda 21 Framework; Contemporary Acknowledge and Trends in Environmental Quality; Effectiveness and Adequacy of Environmental Protection Measures; The Role of GESAMP

Prerequisites - MENV 4105 (Coastal Resources)

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4201 (Coastal Resource Management)

This is an intermediate level course designed to introduce participants to the conceptual elements involved in Resource Management. The course discusses the types of resources available in the CZ, the different levels of management, private and public use of resources and difficulties involved in establishing management policies in a multi-sectoral environment. It will also review the methodology for resource surveys and assessment, resource value and management options through review of practical examples.

Type of Coastal Resources; Elements of Coastal Resources Management; Historical Overview of Managing Coastal Resources; Protecting the Coastal Environment; Development and Coastal Resources Management; Legal Aspect of Managing Coastal Resources; Interdisciplinary Tools for Resolving Coastal Conflicts; Managing Coastal Resources

Prerequisites - ONGR 4101 (Coastal Oceanography and Geomorphology); MENV 4105 (Coastal Resources)

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4202 (Coastal Resources Management)

This intermediate level course is designed to provide students with the conceptual elements of resource management of coastal resources. The course discusses the tenets of sustainability and the human impact on the environment through use and extraction. Stakeholder concerns and management approaches are examined through case studies of management approaches and plans.

Defining Coastal Areas; Coastal Management Use and Issues; Sustainability Tenets; Concepts of Coastal Planning and Management; Management Fundamentals; Technical Issues; Interdisciplinary Tools for Resolving Coastal Conflicts; Case Studies

Prerequisites - MENV 4105 (Coastal Resources)

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours

MENV 4203 (Marine Ecotourism)

This course is designed to give students an overview of the demand for coastal ecotourism products, the implications of this demand on the marine environment and the effects on coastal communities.

The Tourism Industry; Ethics and Sustainability; Ecotourism Development; Integrated Coastal Management (ICM) and Strategic Planning

Duration - 13 weeks

Lecture - 3 hours per week = 39 total hours

MENV 4301 (Ocean Research Technology)

This course will provide an overview of some of the technologies currently being employed in the field of ocean research by the Centre of Sustainable Aquatic Resources (C-SAR) at the Marine Institute. Researchers will discuss how these technologies can be employed in relation to course material covered in the Advanced Diploma in Integrated Coastal and Ocean Management Program. Research Technologies at C-SAR; Industry Needs and Research Technology Development; Current Topics in Ocean Research

Prerequisites - Successful completion of Term 1 and Term 2.

TERM 1 - BSMG 4109 (Coastal Economics); GEOG 4100 (Remote Sensing); MENV 4105 (Coastal Resources); MENV 4106 (Human Ecology); MENV 4107 (Introduction to Integrated Coastal and Ocean Management); ONGR 4104 (Coastal Oceanography and Climatology)

TERM 2 - BSMG 4106 (Legal Aspects of Coastal Zone Management); BSMG 4107 (Conflict Resolution Skills); GEOG 4101 (Geographic Information Systems); MENV 4200 (Environmental Management); MENV 4202 (Coastal Resources Management); STAT 4102 (Statistics for Coastal Zone Management)

Duration - 1 week

MENV 4302 (Fisheries Management and Development)

This course will provide students with general knowledge of fishing methods and harvesting techniques. It has been developed to enhance students' understanding of the impact that fishing has on both the resource and the ocean environment and help them gain insight into future trends in fisheries management and development. Introduction and Harvesting Overview; Fishing Methods; Fish

Biology and Behaviour; Fishing Gear Technology; Scientific Methodology and Harvesting; Allocations and Regulations; Future Trends

Duration - 13 weeks

Lectures - 3 hours/week

MENV 4303 (Current Topics in Ocean Research Technology)

This course will provide an overview of a variety of technologies currently being employed in the field of ocean research.

Flume Tank Applications; Current Research in Sustainable Fisheries Technologies; Remotely Operated Vehicles (ROVs); Trawl Monitoring Systems; Acoustic Research Applications

Prerequisite - Successful completion of Terms 1 and 2

Duration - 1 week

MIPG 4103 (Technical Problem Solving)

The course is designed to provide participants with various creative problem-solving techniques that are used to analyze and solve technical problems that occur in industry. It fosters both the use of creativity and technical knowledge to increase an individual's problem solving skills.

Problem Solving and People; Problem Definition; Generating Ideas and Solutions; Decision Making; Implementation; Evaluation; Crisis Management and Crisis Leadership

Schedule - Web-based instruction (39 hrs total)

MIPG 4104 (Quality Assurance in the Food Industry)

This course is designed to provide participants with an understanding of the various elements necessary in the design and implementation of a quality assurance program for the food industry.

Quality and the Food Industry; Quality Assurance Program; Specifications; Raw Material/Ingredient Supplier Certification; Process Control; Product Quality Audits; Third-party Audit Standards and Certification; Quality Assurance Documentation System

Schedule - Web-based instruction 39 hours (3 hours per week)

MIPG 4113 (Introduction to Food Safety)

This course will introduce students to the fundamental control measures required to produce safe food as well as an overview of food safety regulation, food microbiology, food toxicology and an introduction to the safety of genetically modified foods.

Fundamentals of Food Safety; Food Microbiology and Food Safety; Food Toxicology and Food Safety; Genetically Engineered Foods and Food Safety

Prerequisites - None

Schedule - Web-based Instruction: 39 hours

COURSE DESCRIPTIONS

MIPG 4114 (Fundamentals of Canadian Food Laws and Regulations)

This course is designed to introduce the major topics in Canadian food laws and regulations that are fundamental in the manufacturing and trade of safe and compliant food commodities. While Canadian food laws and regulations are the primary focus of this course, some international food laws and regulations will also be introduced.

Introduction to Canadian Legal System; Canadian Food Inspection Agency (CFIA); Federal Food Acts and Regulations; Additional Federal Departments and Agencies; Provincial Food Laws and Regulations; International Food Laws and Regulations; Genetically Engineered (GE) Food

Schedule - Web-based instruction (39 hrs total)

MIPG 4115 (Foodborne Illness and Food Toxicology)

This course is designed to enable the student to gain knowledge of the biological and chemical hazards present in foods and their effect on human health.

Principles of Food Toxicology; Biotransformations; Chemical Carcinogenesis; Natural Toxicants in Animal Foodstuffs; Toxic Photochemicals; Environmental Toxicants; Animal Drug Residues; Food Additives; Toxicants formed during Food Processing; Important facts of Foodborne Diseases; Foodborne Intoxications; Foodborne Infections; Foodborne Toxicoinfections; Parasites and Algal Toxins; Food Insensitivities

Schedule - Web-based instruction (39 hrs total)

MIPG 4116 (Food Sanitation)

This course is designed to introduce students to the various aspects of food sanitation and to provide students the necessary tools to design, and implement an effective sanitation program.

Sanitation and the Food Industry; Microorganisms; Allergens; Personal Hygiene; Pest and Pest Control; Cleaning and Sanitizing; Food Plant and Equipment Design; Sanitation of Incoming Materials; Water Sanitation; Waste Treatment; Governmental Food Regulations

Prerequisites - None

Schedule - Web-based Instruction: 39 hours

MREK 0100 (Marine Engineering Knowledge)

This introductory course will provide students with the necessary knowledge and skill to gain employment in a marine related/mechanically oriented field, and through continued studies, to obtain a marine engineer's certificate.

Safety; Introduction to Basic Hand Tools; Introduction to Combustion Engines (Gasoline); Engine Systems; Introduction to Diesel Engines; Diesel Engine Fuel Injection Systems; Governors; and Supercharging

Duration - 16 weeks

Lectures - 12 hours/week

Laboratories - 10 hours/week

MREK 0101 (Marine Engineering Knowledge)

This introductory course will provide students with the necessary knowledge and skill to gain employment in a marine related/mechanically oriented field, and through continued studies, to obtain a marine engineer's certificate.

Safety; Introduction to Combustion Engines; Engine Systems; Diesel Engine Fuel Supply, Fuel Injection and Governing Systems

Duration - 13 weeks

Lectures - 10 hours/week = 130 hours

Labs - 6 hours/week = 78 hours

MREK 0200 (Marine Engineering Knowledge)

This advanced course will provide students with the necessary knowledge and skills to gain employment in a marine related/mechanically oriented field, and through continued studies, to obtain a marine engineer's certificate.

Marine Diesel Engine Systems; Pumps and Pumping Systems; Boilers; Air Compressors; Purifiers; Bilge, Ballast Systems and Oil Pollution; Shafting, Propellers and Propulsion; Alignment; Steering Gear; Hydraulics; Refrigeration; Watchkeeping

Prerequisite - MREK 0101 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 8 hours/week

Laboratories - 6 hours/week

MREK 0201 (Ship Stability and Construction)

This introductory course will provide students with a basic knowledge with the principles of ship stability and construction.

Ship Stability; Ship Construction

Duration - 13 weeks

Lectures - 3 hrs/week

MREK 1101 (Marine Engineering Knowledge I)

This course is designed to introduce students to the design, operation, and application of marine diesel engines.

Marine Diesel Engine Terminology; Diesel Engine Stationary Parts; Diesel Engine Moving Parts; Lubrication; Fuel Systems; Cooling Systems; Starting Systems; Charge Air and Exhaust Systems; Marine Propulsion Plants

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

Laboratories - 2 hours/week = 26 hours total

MREK 1201 (Marine Engineering Knowledge II)

This course in Marine Engineering knowledge is designed to provide knowledge of ship auxiliary equipment and shipboard systems.

Pumps and Pumping Systems; Ballast Systems; Seawater Cooling Systems; Fuel Handling System; Bilge Water Handling System; Compressed Air System; Steering Gear; Steam Boilers and Steam Plant

Prerequisites - MREK 1101 (Marine Engineering Knowledge I)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

Laboratories - 2 hours/week = 26 hours total

MREK 2101 (Marine Engineering Knowledge)

This is an introductory course designed to give students in the Naval Architecture program knowledge of marine engineering systems and their components.

Fasteners; Piping Material, Specifications, Connections and Hangers; Valves and Cocks; Fuels and Properties; Pumps; Compressors; Bilge System; Ballast System; Fuel Oil System; Seawater Systems; Freshwater System; Compressed Air System. Lubricating Oil System

Prerequisites - CHEM 1100 (Chemistry)

Co-requisites - NARC 1104 (Steel Ship Structure); MECH 2102 (Mechanics); MATH 1101(Introduction to Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories/Projects - 2 hours/week

MREK 2102 (Marine Engineering Knowledge)

This is a marine engineering course designed to give the students knowledge and understanding of the basic operational principles of ships' machinery.

Fuels; Instrumentation and Controls; Valves; Pumps and Pumping Stations; Steam Boilers

Prerequisite - NASC 1204 (Seamanship II)

Duration - 13 weeks

Lectures - 3 hours/week

MREK 2103 (Marine Engineering Knowledge)

The course is designed to give students in Marine Engineering a working knowledge of internal combustion engines which can be applied to their operation and maintenance.

Fuels; Power Plants; Diesel Engine Classification and Stationary Parts; Diesel Engine Moving Parts; Tribology and Engine Lubricating; Engine Power and Fuel Consumption; Intake and Exhaust Systems; Fuel Burning Systems; Cooling Systems; Governing.

Duration - 13 weeks

Lectures - 5 hours/week

Laboratories - 2 hours/week

MREK 2107 (Marine Engineering Knowledge)

This is the first course in marine engineering knowledge designed to give the student an understanding of marine terminology, propulsion equipment, shipboard systems, marine pollution and an engineer's duties.

Marine Living; Marine Terminology; Main Propulsion Machinery (Diesel Engines); Marine Auxiliary Machinery; Steam Boilers and Steam Plants; Power Plants; Bilge, Ballast Systems, and Oil Pollution; Engineer's Duties

Duration - 13 weeks

Lectures - 5 hours/week

MREK 2110 (Marine Engineering Knowledge I)

This is the first course in marine engineering knowledge, designed to prepare students for their first workterm by providing knowledge of propulsion equipment and shipboard systems.

Marine Diesel Engines; Steam Boilers and Steam Plants; Marine Propulsion Plants.

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MREK 2111 (Marine Engineering Knowledge III)

This is the third of seven courses in marine engineering knowledge. It is designed to provide the student with knowledge of ship auxiliary equipment and shipboard systems.

Heat Exchangers; Freshwater Systems, Evaporators and Reverse Osmosis; Sewage Systems and Incinerators; Deck Machinery; Fire Prevention Systems, Regulations, and Safety; Watertight Doors; Propulsion Systems; Vibration

Prerequisite - MREK 1201 (Marine Engineering Knowledge II)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

MREK 2201 (Marine Engineering Knowledge)

The course is designed to give Naval Architecture students more knowledge of Marine Engineering Systems and basic knowledge of Power Plant components.

Shafting Arrangements; Prime Movers; Steam Generation and Systems; Exhaust Gas Systems; Engine Room Ventilation; Fire Fighting Systems; Domestic Sanitary Systems; Hull Machinery

Prerequisite - MREK 2101 (Marine Engineering Knowledge)

Duration - 5 week

Lecture - 6 hours/week = 30 hours total

Laboratory - 4 hours/week = 20 hours total

MREK 2202 (Marine Engineering Knowledge)

This is a marine engineering course designed to give the student's knowledge and understanding of the basic operational principles of ship's machinery.

Internal Combustion Engines; Steam Turbines; Propulsion Systems; Steering Gears; Tank Level and Draft Measurement; and Deck Machinery Layout

Prerequisite - MREK 2102 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 3 hours/week

MREK 2203 (Marine Engineering Knowledge)

This course is designed to give Marine Engineering students a knowledge of auxiliary systems and equipment that can be applied to their operation and maintenance.

Steam Boilers and Steam Plants; Pumps; Air Compressors and Systems; Coolers and Cooling Systems; Windlass; Bilge, Ballast Systems and Oil Pollution; Sewage Plant and Pollution; Steering Gears; and Fuel Oil Pretreatment and Burning Systems

COURSE DESCRIPTIONS

Prerequisite - MREK 2103 (Marine Engineering Knowledge)

Duration - 13 weeks

Lecture - 3 hours/week

Laboratories - 2 hours/week

MREK 2207 (Marine Engineering Knowledge)

This course is designed for the marine engineering student who has complete the first work term. This course will provide the student with the concepts of internal combustion engines and associated subsystems. It is offered using the Propulsion Plant Simulator (PPS) and Diesel/Fitting Shops for the application of theory as well as providing the student with the requirements for the Level 1 PPS course.

Diesel Engine Cooling Water Systems; Diesel Engine Liner and Jacket Water-cooled Systems; Piston and Piston Cooling; Intake and Exhaust Systems; Air Compressors and Systems; Diesel Engine Starting Systems; Diesel Engine Lubrication, Crankcase Explosions, and Scavenge Fires; Pumps; Fuels; Fuel Burning Systems; Waste Heat Recovery Systems; Fresh Water Generation and Treatment.

Prerequisite - MREK 2107 (Marine Engineering); WKTM 1103 (Work Term 1- Marine Engineering)

Duration - 13 weeks

Lectures - 8 hours/week

MREK 2208 (Marine Engineering Knowledge II)

This is the second course in marine engineering knowledge designed to prepare students for their first workterm by providing knowledge of ship auxiliary equipment and shipboard systems.

Marine Auxiliary Equipment; Bilge, Ballast and Fuel Handling Systems

Prerequisite - MREK 2110 (Marine Engineering Knowledge I)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MREK 3102 (Marine Engineering Knowledge)

This is a marine engineering course designed to give students a knowledge and understanding of the basic operational principles of ship's machinery.

Cargo Piping and Pumps; Refrigeration; Vibration; Venturi Systems; Engine Power, Propeller Pitch, and Power

Prerequisite - MREK 2202 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 3 hours/week

MREK 3103 (Marine Engineering Knowledge)

This course is designed to give the student the knowledge of design considerations for internal combustion engines suitable for marine applications whereby the student will be able to diagnose machinery problems.

Fuel Treatment; Valve Timing and Gas Exchange Processes; Fuel Injection Systems; Diesel Engine Liner and Jacket Water-Cooled Systems; Piston and Piston Cooling Systems; Diesel Engine Lubrication, Crankcase Explosions, and Scavenge Fires; Diesel Engine Starting Systems; Bearing Design; Reduction

Gears and Couplings; Intermediate Shafting and Thrust Block.

Prerequisite - MREK 2203 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 5 hours/week

Laboratories - 2 hours/week

MREK 3104 (Marine Engineering Knowledge)

This course is designed to develop students' ability to understand an internal combustion engine's fuel/governing system and to determine power developed. It will also lead students in a study of reduction gearing, main shafting, controllable pitch propellers and steering gears.

Fuel Treatment; Valve Timing and Gas Exchange Process; Fuel Injection Systems; Engine Power and Fuel Consumption; Governors; Bearing Design; Reduction Gears and Couplings; Intermediate Shafting and Thrust Block; Stern Tubes and CP Propellers; Steering Gears

Prerequisite - MREK 2207 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures - 4 hours/week

MREK 3106 (Marine Engineering Knowledge III)

This course will provide the student with more in-depth understanding of internal combustion engine concepts and associated systems.

Diesel Engine Cooling Water Systems; Diesel Engine Liner and Jacket Water-cooled Systems; Piston and Piston Cooling; Intake and Exhaust Systems; Air Compressors and Systems; Diesel Engine Starting Systems; Diesel Engine Lubrication, Crankcase Explosions, and Scavenge Fires; Fuels; Fuel Handling & Storage; Fuel Burning Systems; Governors.

Prerequisite - MREK 2208 (Marine Engineering Knowledge II)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MREK 3201 (Marine Engineering Knowledge)

This is an intermediate level course designed to give students in Marine Engineering a working knowledge of gas turbines which can be applied to their operation and maintenance.

Gas Turbine Types and Classification; Principle of Operation; Structure of Gas Turbines; Gas Turbine Systems; Reduction Gearing for Gas Turbine Installations; Operation and Monitoring; Overview of Naval Gas Turbines

Prerequisite - MREK 2203 (Marine Engineering Knowledge)

Duration - 13 weeks

Lecture - 3 hours/week

Laboratories - 2 hours/week

MREK 3202 (Marine Engineering Knowledge)

This is the final marine engineering course and it is designed to deal with steam/gas propulsion, vibration pollution, and maintenance requirements.

Water Tube Boilers; Steam Turbines and Steam Plants; Boiler Water Treatment and Testing; Gas Turbines; Introduction to Vibration; Sewage Plant and Pollution; Maintenance; Tanker Operations; Deck Machinery

Prerequisite - MREK 3104 (Marine Engineering Knowledge)

Duration - 5 weeks

Lectures - 8 hours/week

MREK 3203 (Marine Engineering Knowledge)

This course is designed to give the students the knowledge of systems, regulations and safety so they can apply this knowledge in their profession.

Water Tube Boilers; Steam Turbines and Steam Plants; Boiler Water Treatment and Testing; Waste Heat Recovery Systems; Fresh Water Generation and Treatment; Tanker Safety and Inert Gas Systems; Stern Tubes and C.P. Propellers; Fire Prevention Systems, Regulations, and Safety; Introduction to Vibrations; Crank Shaft Alignment and Deflection; Maintenance Procedures; Engineer's Duties

Prerequisite - MREK 3103 (Marine Engineering Knowledge)

Duration - 13 weeks

Lecture - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

MREK 3204 (Marine Engineering Knowledge IV)

This course is designed to expand on engineering concepts with respect to steam engineering knowledge, gas turbines and maintenance procedures.

Water Tube Boilers; Steam Turbines and Steam Plants; Boiler Water Treatment and Testing; Gas Turbines; Waste Heat Recovery Systems.

Prerequisites - MREK 3106 (Marine Engineering Knowledge III)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

MREK 3205 (Marine Engineering Knowledge V)

This course consists of Level 1 Propulsion Plant Propulsion Simulator course content and general engineering knowledge.

Introduction to Vibration; Sewage Plant and Pollution; Maintenance; Confined Space Entry; Deck Machinery; Exhaust Emissions; Oil Pollution Prevention Regulations; Propulsion Plant Simulator Course, Level 1

Prerequisite - MREK 3204 (Marine Engineering Knowledge IV)

Duration - 13 weeks

Lectures - 4 hours/week for 13 weeks = 52 hours total

Laboratories - 4 hours/week for 13 weeks = 52 hours total

MTPR 1200 (Materials and Processes)

The purpose of this course is to provide students with knowledge of the behavior and characteristics of common engineering materials and give them an understanding of basic industrial processes. This will enable the students to select suitable materials and fabrication methods for the design and manufacture of parts to ensure successful service. The course also introduces the analysis of stress in load-bearing structural members. The concepts of stress, strain and elasticity are applied to elementary systems of normal, shear, and torsional stress in order to give students an understanding of one of the fundamental building blocks upon which all engineering designs are based.

Structure of Materials; Physical and Mechanical Properties of Materials; Phase Diagrams; Non-ferrous Metals; Heat Treating Steels; Corrosion; Plastics; Ceramics; Basic Stress Systems; Torsional Shearing Stress

Prerequisite - PHYS 1102 (Physics); MATH 1102 (Pre-Calculus)

Duration - 13 weeks

Lectures - 4 hours per week = 52 hours total

Laboratories - 2 hours every second week = 12 hours total

MTPR 1300 (Materials and Processes)

This course provides students with basic knowledge about the behaviour and characteristics of common engineering materials and gives them an introduction to basic refining processes. This is important for understanding materials and fabrication methods for the design and manufacture of parts for durable service in the marine environment.

Production of Steel and Other Metals; Identification of Metals; Physical and Mechanical Properties of Metals; Structure of Metals; Phase Diagrams; Heat Treating; Non-Metal Materials; Adhesives, Ceramics, and Wood

Duration - 5 weeks

Lectures - 6 hours per week = 30 hours total

Laboratories - 2 hours per week = 10 hours total

MTPR 2100 (Strength of Materials)

This course is an introduction to the analysis of stresses in load bearing structural members. Concepts of stress, strain and elasticity are applied to elementary systems of normal, shear and bending stress in order to give students an understanding of one of the fundamental building blocks upon which all engineering designs are based.

Basic Stress Systems; Strain and Elasticity; Mechanical Properties of Materials; Shear Force and Bending Moments; Stress Due to Bending; Torsional Shearing Stress; Statically Indeterminate Systems

Prerequisites - MATH 1101 (Introduction to Calculus); MECH 2102 (Mechanics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

COURSE DESCRIPTIONS

MTPR 2101 (Strength of Materials)

This course is an introduction to the analysis of stresses in load bearing structural members. Concepts of stress, strain and elasticity are applied to elementary systems of normal, shear and bending stress in order to give students an understanding of one of the fundamental building blocks upon which all engineering designs are based.

Basic Stress Systems; Strain and Elasticity; Mechanical Properties of Materials; Shear Force and Bending Moments; Stress Due to Bending; Torsional Shearing Stress; Combined Bending and Direct Stress; Deflection of Beams

Co-requisites - MATH 1103 (Introduction to Calculus) or MATH 1200 (Calculus); MECH 1100 (Mechanics) or MECH 1101 (Mechanics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

MTPR 2103 (Materials and Processes)

The purpose of this course is to provide students with the knowledge of the behaviour and characteristics of common engineering materials and give them an understanding of basic industrial processes. This will enable students to select suitable materials and fabrication methods for the design and manufacture of parts to ensure successful service.

Production of Steel and Other Metals; Identification of Metals; Physical and Mechanical Properties of Metals; Structure of Metals; Phase Diagrams; Heat Treating; Plastics; Adhesives, Ceramics and Wood

Duration - 13 weeks

Lectures - 3 hour/week

Laboratories - 2 hours/week

MTPR 2104 (Materials and Processes)

This course provides students with knowledge about the behaviour and characteristics of common engineering materials and gives them an understanding of basic industrial processes. This background will enable students to select suitable materials and fabrication methods for the design and manufacture of parts to ensure successful service.

Production of Steel and Other Metals; Identification of Metals; Physical and Mechanical Properties of Metals; Structure of Metals; Phase Diagrams; Heat Treating; Plastics; Adhesive, Ceramics, and Wood

Prerequisite - CHEM 1100 (Chemistry)

Duration - 5 weeks

Lectures - 6 hours/week = 30 hours total

Laboratories - 2 hours/week = 10 hours total

OR

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week for 5 weeks = 10 hours total

MTPR 2108 (Strength of Materials)

This course is an introduction to the analysis of stresses in load bearing structural members. Concepts of stress, strain and elasticity are applied to elementary systems of normal, shear and bending stress in order to give students an understanding of one of the fundamental building blocks upon which all engineering designs are based.

Basic Stress Systems; Strain and Elasticity; Mechanical Properties of Materials; Shear Force and Bending Moments; Stress due to Bending; Torsional Shearing Stress; Statically Indeterminate Systems

Prerequisite - MATH 1101 (Introduction to Calculus); MECH2110 (Mechanics)

Duration - 13 weeks total, excluding final examination

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/ week = 13 hours total

MTPR 2208 (Materials and Processes)

The purpose of this course is to provide students with the knowledge of the behaviour and characteristics of common engineering materials and give them an understanding of basic industrial processes. This will enable students to select suitable materials and fabrication methods for the design and manufacture of parts to ensure successful service.

Production of Steel and other Metals; Identification of Metals; Physical and Mechanical Properties of Metals; Structure of Metals; Phase Diagrams; Heat Treating; Inspection and Testing of Materials; Corrosion; Plastics; Adhesives, Ceramics, and Composites

Prerequisites - CHEM 1200 (Chemistry);

WKPR 2115 (Mechanical Workshop)

Duration - 13 weeks

Lectures - 3 hours per week = 39 hours total

Laboratories - 2 hours once every second week = 12 hours total

MTPR 3100 (Strength of Materials)

This second Strength of Materials course expands on previously studied concepts of simple stress, strain and elasticity, and provides a basis for elementary calculations in engineering design.

Strain Energy, Impact Loads; Combined Bending and Direct Stresses; Bolted, Riveted and Welded Joints; Deflection of Beams; Columns; Complex Stress and Strain Systems.

Prerequisite - MTPR 2100 (Strength of Materials) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

MTPR 3104 (Strength of Materials)

This second Strength of Materials course expands on previously studied concepts of simple stress, strain and elasticity, and provides a basis for elementary calculations in engineering design.

Strain Energy, Impact Loads; Combined Bending and Direct Stresses; Bolted, Riveted and Welded Joints; Deflection of Beams; Columns; Complex Stress and Strain Systems

Prerequisite - MTPR 2108 (Strength of Materials)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 2 hour/week = 26 hours

MTPR 3201 (Strength of Materials)

This advanced course in Strength of Materials extends on the application of fundamental principles presented in Strength of Materials 2100 and Strength of Materials 3100. This course is intended to familiarize students with elements of structural design and machine component design often observed aboard ships.

Calculation Sheets; Design Morphology; Evaluation of Criteria and Constraints; Problem Analysis; Design Considerations; Codes and Standards; Precision and Rounding of Dimensions

Prerequisite - MTPR 3100 (Strength of Materials)

Duration - 5 weeks

Lectures - 6 hours/week

NARC 1101 (Ship Hull Geometry)

This course will develop an ability to define the complex geometry of a ship's hull form with emphasis on practical draughting skills required to attain a fair and accurate form.

Lines Plan Interpretation; Terminology and Form Coefficients; Hull Forms; Draughting Techniques; Lifting Hull Lines

Prerequisites - PHYS 1200 (Physics); MATH 1101 (Introduction to Calculus); ENGR 1103 (Engineering Graphics); NARC 1103 (Ships & Shipping)

Duration - 5 weeks

Lectures - 4 hours/week = 20 hours total

Laboratories - 6 hours/week = 30 hours total

NARC 1102 (Ship Structural Geometry)

This is an introductory course to ship structures designed to familiarize students with structural arrangements and nomenclature and to improve their computer aided drafting ability.

Framing Systems; Bottom Structure; Side Structure; Deck Structure; Bulkhead Structure; Shell Structure; Fore End Structure; Aft End Structure

Prerequisite - MATH 1100 (Pre-Calculus); ENGR 1103 (Engineering Graphics); ENSY 1202 (Introduction to MESD)

Co-requisite - ENGR 1201 (Introduction to AutoCAD)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 2 hours/week

NARC 1103 (Ships and Shipping)

This is a first level course designed to introduce the basic elements of ship design. Ships' missions are related to vessel dimensions, general layout, hull form, structure and stability characteristics. Emphasis is placed on the interpretation of ships' drawings including the lines plan, general arrangement and profile and decks.

Purpose of Ships; Primary Design Criteria; The Ship Design Process; Loads On A Ship; Structural Framing Systems; Ships Types and Structure; Engineering Fundamentals; Buoyancy and Weight; Transverse Stability; Ship Types and Stability

Co-requisite - ENGR 1103

Duration - 13 weeks

Lectures - 5 hours/week - 65 hours total

NARC 1104 (Steel Ship Structure)

This is an introductory course to ship structures designed to familiarize students with structural arrangements and nomenclature and to improve their computer aided drafting ability.

Bottom Structure; Side Structure; Deck Structure; Bulkhead Structure; Shell Structure

Prerequisites - MATH 1100 (Pre-Calculus); PHYS 1100 (Physics); ENGR 1103 (Engineering Graphics); NARC 1103 (Ships & Shipping)

Corequisite - ENGR 1201 (Introduction to AutoCAD)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 2 hours/week

NARC 2100 (Naval Architecture)

This is a course designed to develop students' ability to perform ship area and volume calculations with emphasis on practical skills to read lines plan and extract data to create cross-section drawings in way of machinery spaces.

Lines Plan; Draft and Trim; Coefficients of Hull Form; Integrating Rules and Methods; Tonnes per Centimetre of Immersion (TPC); Centre of Flotation; Volume and Displacement; Buoyancy and the Centre of Buoyancy (VCB, LCD); Centre of Gravity; Hydrostatic Curves.

Prerequisites - ENSY 1201 (Ship Types and Systems); NARC 1102 (Ship Structural Geometry)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 1 hour/week

NARC 2101 (Naval Architecture)

This is an intermediate year course designed for students in the Marine Engineering Diploma of Technology program to prepare them for Transport Canada examinations as Second and Chief Engineers.

Ship Arrangements and Configurations; Ship Terms and Definitions; Stresses in Ships' Structures; Steel Sections used in Shipbuilding; Aluminum used in Shipbuilding; Classification Societies and Regulatory Agencies; Keels; Framing Systems; Single-bottom Construction; Double-bottom Construction; Shell Plating; Strengthening for Navigation in Ice; Bulkheads; Deck Structures; Hatch Covers; Forward End Structural Arrangements and Details; Anchoring and Mooring Arrangements; Testing of Anchors and Cables; Aft End Structural Arrangements and Details; Shafting and Stern Tube Alignment

Duration - 13 weeks

Lectures - 3 hours/week

COURSE DESCRIPTIONS

NARC 2102 (Shipbuilding)

This is the first of two courses to develop the students' understanding of ship structures and the rules and regulations which affect the design, construction, and repair of ships.

The Ship's Environment; Stresses on a Ship; Ship Construction Terminology; Plates and Sections; The Hull Girder; Construction Materials; Framing Systems; Construction Details; Interpretation of Ships' Drawings; Construction of Typical Ship Types; Fore End Structures; and Aft End Structures; Superstructures and Deckhouses; Ice Strengthening

Prerequisites - NASC 1204 (Seamanship II)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 1 hour/week = 13 hours

NARC 2103 (Ship Stability)

This course develops an understanding of static stability theory, criteria for stability assessment and rules and regulations impacting on vessel stability. Emphasis is placed on practical application of the theory to generate a complete Trim and Stability Booklet to Transport Canada standards.

Large Angle Stability; Free Surface; Inclining Test; Tank Calibrations; Condition Sheets; Rules and Regulations - Stability; Trim and Stability Booklet; Computer Software Application

Prerequisite - NARC 2109 (Hydrostatics)

Duration - 13 weeks

Lectures - 5 hours/week

NARC 2107 (Shipbuilding)

This is the first of two intermediate level courses designed to give the students a working knowledge of the methods and practices of modern steel ship construction.

Fore End Structure; Aft End Structure; Rudders and Nozzles; Main Machinery, Auxiliary Machinery and Deck Machinery Seatings; Shell; Casings Superstructures and Deckhouses

Prerequisites - MTPR 2104 (Materials & Processes); NARC 1101 (Ship Hull Geometry); NARC 1104 (Steel Ship Structure); MECH 2102 (Mechanics); MATH 1101 (Introduction to Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

NARC 2108 (Outfitting)

This intermediate-level course is designed to give the student a working knowledge of the materials, methods and regulations used in the outfitting of steel ships.

Crew Accommodation Regulations; Joiner Bhds, Linings, and Ceilings; Deck Coverings; Insulation; HVAC; Furniture and Fittings; Ladders and Stairs; Anchoring and Mooring Equipment; Life Saving Equipment; Cargo Handling Equipment, Masts and Derricks; Hatches, Man Holes, and Doors; Painting and Preservation

Prerequisites - MTPR 2104 (Materials and Processes); NARC 1101 (Ship Hull Geometry); NARC 1104 (Steel Ship Structure); MECH 2102 (Mechanics); MATH 1101 (Introduction to Calculus)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

NARC 2109 (Hydrostatics)

This is an intermediate level course designed to introduce students to the principles of hydrostatics in preparation for further courses in ship stability.

Basic Hydrostatics; Numerical Calculations; Hydrostatics Calculations; Hydrostatic Curves; Ship Mass and Center of Mass; Small Angle Stability; Longitudinal Stability and Trim

Prerequisites - Marine Engineering Systems Design

Prerequisites: NARC 1102 (Ship Structural Geometry); MATH 1101 (Introduction to Calculus); MECH 2102 (Mechanics)

Naval Architecture Prerequisites: NARC 1101 (Ship Hull Geometry); NARC 1104 (Steel Ship Structure); MATH 1101 (Introduction to Calculus); MECH 2102 (Mechanics)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

NARC 2110 (Ship Operations Management)

This course will develop a students understanding of the basics of engineering economic analysis and the economic environment in which ships operate.

Ship Owners; Income and Expenses; The Time Value of Money; Methods of Economic Analysis; Sensitivity Analysis; Mission Profiles

Prerequisites - NARC 2103 (Ship Stability); NARC 2207 (Ship Building); NARC 2208 (Ship Building)

Duration - 5 weeks

Lectures/Instruction - 7 hours/week = 35 hours total

NARC 2200 (Naval Architecture)

This course is designed to develop the student's understanding of ship's stability as well as national and international regulations and standards related to stability criteria.

Stability at Small Angles of Heel; Longitudinal Stability; Stability at Large Angles of Heel; Effect on Stability by Lifting Weight; Angle of List Caused by Transverse Shift of Items of Deadweight

Prerequisite - NARC 2100 (Naval Architecture)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 1 hour/week

NARC 2201 (Resistance and Propulsion)

This is an intermediate level course intended to introduce students in the Naval Architecture program to the concepts associated with the resistance associated with ship movement. The course will develop students' ability to perform calculations associated with propulsion and propeller selection.

Ship Resistance; Ship Friction Resistance; Wave Making Resistance; Similarity and Model Testing; Systematic Series; Other Resistance Components; Propulsion; Powering Calculation; Fuel Consumption; Screw Propeller;

Propeller Ship Interaction; Propeller Cavitation.

Prerequisite - MATH 1200 (Calculus); NARC 2109 (Hydrostatics); MREK 2101 (Marine Engineering Knowledge)

Duration - 13 weeks

Lectures/Laboratories - 5 hours/week

NARC 2202 (Ship Building)

This course is designed to develop a student's understanding of ship structures and the rules and regulations which affect the design, construction, and the repair of ships.

Rudders; Steering and Manoeuvring; Welding and Cutting Procedures; Riveting; Shipyard Practice; Rules and Regulations; Structural Fire Protection; Watertight Divisions; Loadlines; Tonnage; Surveys and Maintenance; Repair Procedures and Damage Reports

Prerequisite - NARC 2102 (Ship Building)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

NARC 2207 (Ship Building)

This is the second of two intermediate level courses designed to give the student a working knowledge of the methods and practices of modern steel ship yards.

Development of Unit Construction; Unit Breakdown; Unit Drawing; Methods of Joining Structural Parts; Weights and Centroids; Material List and Coding; Lofting; Cutting and Erecting Steel; Forming of Steel Plate; Structural Repair Work; Non-Destructive Examination Techniques

Prerequisites - MREK 2101 (Marine Engineering Knowledge); NARC 2107 (Ship Building); NARC 2108 (Ship Building)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

NARC 2208 (Ship Building)

This is the first of two courses designed to give the student a working knowledge of the structural calculations involved in the design of a ship.

Ship Building Materials; Simple Ship Stresses; Ship Hull Girder; Longitudinal Strength Calculation; Transverse Strength; Sea Loads; Fatigue/Brittle Fracture; Classification Societies; Midship Section Scantlings and Sections Drawing

Prerequisites - NARC 2109 (Hydrostatics); NARC 2107 (Ship Building); NARC 2108 (Ship Building); MTPR 2100 (Strength of Materials)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

NARC 2209 (Navigation Safety)

This course in navigation safety covers the International Regulations for Preventing Collisions at Sea with Canadian modifications as contained in Transport Canada's Collision Regulations TP 10739. It includes IMO's basic watchkeeping principles and recommendations as stated in the STCW'95 Code sections A-VIII/2 and B-VIII/2.

General; Steering and Sailing Rules; Lights and Shapes; Sound and Light Signals; Exemptions and Additional Canadian Provisions; Positioning and Technical Details of Lights and Shapes; Additional Signals for Fishing Vessels in Close Proximity; Technical Details of Sound Signal Appliances; Distress Signals; STCW'95 Standard Watchkeeping Procedures and Practices

Prerequisites - NASC 1204 (Seamanship II), WKTM 1102 (Sea Phase I)

Duration - 13 weeks

Lectures - 3 hours/week for 13 weeks = 39 hours total

Laboratories - 2 hours/week for 13 weeks = 26 hours total

NARC 3100 (Naval Architecture)

This is an intermediate year course designed for students in the Marine Engineering Diploma of Technology program to prepare them for Transport Canada examinations as Second and Chief Engineers.

Rudder Construction; Rudder Theory; Resistance, Powering, and Fuel Consumption; Propellers; Tailshafts and Propeller Mountings; Kort Nozzles or Ducted Propellers; Voith Schneider Propulsion Units; Engine and Boiler Rooms; Casings; Superstructures and Deckhouses; Bulwarks and Freeing Ports; Testing of Compartments and Tanks; Shipyard Practices; Safety Related Issues; Insulations; Ventilators, Air Sounding Pipes, and Filling Pipes; Tonnage, Freeboard, and Hull Markings

Prerequisite - NARC 2101 (Naval Architecture)

Duration - 13 weeks

Lectures - 3 hours/week

NARC 3102 (Ship Design)

This course is designed to introduce students of Naval Architecture to the concept of rational design, and to provide them with the standard tools required.

Mission Profile; State of the Art; Proportions; Lines; Hull Shape Calculations; Preliminary Structural Calculations; General Arrangement; Powering; Weight Estimate; Electrical Considerations; Machinery Considerations; Capacities; Trim and Stability; Damaged Stability; Regulations; Economic Considerations

Prerequisites - MTPR 3201 (Strength of Materials); ELTK 2104 (Electrotechnology); MREK 2201 (Marine Engineering Knowledge); NARC 2110 (Ship Operations Management)

Duration - 13 weeks

Lectures - 5 hours/week = 65 hours total

Laboratories - 0 hours/week = 0 hours total

COURSE DESCRIPTIONS

NARC 3103 (Ship Structural Design)

This the second of two courses designed to give the student a working knowledge of the structural calculations involved in the design of a ship.

Structural Design Considerations; Survey and Inspection; Testing of Compartments and Tanks; Drydocking Facilities and Docking Procedures; Launching

Prerequisites - MTPR 3201 (Strength of Materials); NARC 2207 (Ship Building); NARC 2208 (Ship Building)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

NARC 3104 (Preliminary Design Project)

This course is designed to give students of Naval Architecture the opportunity to apply skills learned in preceding courses and in the ship design course, which must be taken concurrently.

Mission Profile; State of the Art; Proportions; Lines; Hull Shape Calculations; Preliminary Structural Calculations; General Arrangement; Powering;; Weight Estimate; Electrical Considerations; Machinery Considerations; Capacities; Trim and Stability; Damaged Stability; Regulations; Economic Considerations

Prerequisites - MTPR 3201 (Strength of Materials); ELTK 2104 (Electrotechnology); MREK 2201 (Marine Engineering Knowledge); NARC 2110 (Ship Operations Management)

Duration - 13 weeks

Lectures - 0 hours/week = 0 hours total

Laboratories - 5 hours/week = 65 hours total

NARC 3106 (Stability)

This course develops an understanding of the effect of dynamic forces on stability and studies in detail methods of assessing damaged ship stability including computer software applications. Methods of launching are described and end launch calculations performed. The student becomes familiar with Loadline and Tonnage regulations and their application. Throughout, emphasis is placed on calculations and presentation required by regulatory agencies.

Dynamic Stability; Subdivision; Damaged Stability; Docking and Grounding; Launching; Freeboard; Tonnage

Prerequisite - NARC 2103 (Ship Stability)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hour/week

NARC 3108 (Boat Design - Composite Structure)

The purpose of this course is to provide the student with a basic knowledge of the materials, processes and structural details involved with the construction of composite boats,. This will enable the selection of suitable materials and fabrication methods for the design and production of Fibre Reinforced Plastic boat hulls and decks. The student will be able to determine structural scantlings and create the appropriate drawings required for approval by internationally recognized classification societies.

Introduction; Materials; Processes; Composite Boat Structure; Design Rules and Regulations; Drawing Standards

Prerequisites - NARC 1101 (Ship Hull Geometry); MTPR 2100 (Strength of Materials)

Duration - 13 weeks

Lectures - 3 hours per week

Laboratories - 2 hours per week

NARC 3200 (Naval Architecture)

This is an advanced year course designed for students in the Marine Engineering Diploma of Technology program to introduce them to the fundamentals and applications of stability theory.

Laws of Flotation; Coefficients of Form, Areas, Volumes, and Moments; Pressures and Centres of Pressure; Centre of Gravity; Free Surface Effects; Transverse Statical Stability; Waves and Rolling; Dynamical Stability; Longitudinal Stability; Change in Draft due to Bilging; Dry-docking and Grounding

Prerequisite - NARC 3100 (Naval Architecture)

Duration - 13 weeks

Lectures - 4 hours/week

NARC 3201 (Marine Electrical Project)

This is a project course designed for advanced Naval Architecture students. It is intended to familiarize the students with the design of the electrical system aboard ships and to enable them to complete the electrical design required for their technical project.

Planning; System Analysis; Project Research; System Design; Report Preparation; Report Presentation

Prerequisite - NARC 3102 (Ship Design); NARC 3104 (Preliminary Design Project); NARC 3203 (Hull Form Development Project)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 3 hours/week

NARC 3202 (Marine Engineering Project)

This (course) project is designed to give students the guided possibility to develop marine engineering design drawings and calculations. The exercise is closely inter-connected with the student Ship Design Project enhancing correctness of ship structure design and space division to accommodate machinery.

Tanks Capacity Plan; Ship Systems Single Line Diagrams and Calculations; Shafting Arrangement (sketch); Preliminary Machinery Arrangement and List of Machinery

Prerequisites - NARC 3102 (Ship Design); NARC 3104 (Preliminary Design Project); NARC 3203 (Hull Form Development Project); NARC 2201 (Resistance & Propulsion)
Duration - 13 weeks
Lectures - 3 hours/week = 39 hours total
Laboratories - 2 hours/week = 26 hours total

NARC 3203 (Hull Form Development Project)

This course develops an understanding of the factors influencing hull form design. Hand lines and computer generated lines are developed by the student to satisfy particular design criteria. Throughout, emphasis is placed on practical application.

Defining the Hull; Factors Influencing Hull Form; Coefficients of Form; Development from Basis Hull Form; First Principle Approach; Preliminary Lines; Hydrostatic Software as a Design Tool; Hand Generated Lines; Computer Generated Lines; Developable Hull Forms; Modelling

Prerequisite - MTPR 3201 (Strength of Materials); ELTK 2104 (Electrotechnology); MREK 2201 (Marine Engineering Knowledge); NARC 2110 (Ship Operations Management)
Co-requisites - NARC 3102 (Ship Design); NARC 3104 (Preliminary Design Project)
Duration - 13 weeks
Lectures - 2 hours/week = 26 hours total
Laboratories - 3 hours/week = 39 hours total

NARC 3204 (Ship Structural Design Project)

This course is intended to expand and reinforce the knowledge gained in previous Ship Structure courses.

Structural Logic; Scantling Approximations; Scantling Calculations; Detailing; Weight Estimate

Prerequisite - NARC 3102 (Ship Design); NARC 3104 (Preliminary Design Project); NARC 3203 (Hull Form Development Project)
Duration - 13 weeks
Lectures - 3 hours/week = 39 hours total
Laboratories - 2 hours/week = 26 hours total

NARC 3206 (Ship Arrangement Project)

This course is designed to give students of Naval Architecture the opportunity to apply skills learned in preceding courses.

Proportions; Freeboard; General Arrangement; Powering

Prerequisite - NARC 3102 (Ship Design); NARC 3104 (Preliminary Design Project); NARC 3203 (Hull Form Development Project); NARC 2201 (Resistance & Propulsion)
Duration - 13 weeks
Lectures - 3 hours/week = 39 hours total
Laboratories - 2 hours/week = 24 hours total

NARC 3208 (Boat Design-Fabrication)

This is a project based course designed to lead the student through the practical steps involved in the construction of a moulded hull from a designer's initial lines plan to the first moulded product.

Project Management; Quantity Surveying; Plug Design and Construction; Mould Design and Construction; Hull Construction

Prerequisite - NARC3108 (Boat Design - Composite Structure)
Duration - 13 weeks
Lectures - 2 hours per week
Laboratories - 3 hours per week

NARC 3209 (Offshore Installations and Productions)

This course is designed to familiarize students with how oil and gas exploration is carried out offshore, provide an introduction to drilling equipment and operations and describe offshore field development options and productions systems.

Looking For Oil and Gas Offshore; Offshore Environmental Conditions; Environmental Loads on Offshore Structures; Offshore Exploration – Drilling Vessel Types and Selection; Offshore Exploration – Drilling Equipment and Operations; Offshore Production – Platform Types and Selection; Transportation and Installation of Offshore Structures; Offshore Production Wells; Primary Processing of Oil and Gas Offshore; Classification and Certification

Duration - 5 weeks
Lectures - 7 hours/week = 35 hours total
Lab - 4 hours/week = 20 hours total

NARC 3300 (Ship Design Project)

This course is designed to give students of Naval Architecture the opportunity to apply skills learned in preceding courses.

Capacities; Trim and Stability; Damaged Stability; Cost Estimates; Oral Presentation

Prerequisites - NARC 3201 (Marine Electrical Project); NARC 3202 (Marine Engineering Project); NARC 3203 (Hull Form Development Project); NARC 3204 (Ship Structural Design Project); NARC 3206 (Ship Arrangement Project)

Duration - 5 weeks
Lectures - 18 hours/week = 90 hours total
Laboratories - 0 hours/week = 0 hours total

NASC 0100 (General Ship Knowledge)

This is an introductory course intended for new entry seapersons who intend to embark upon a marine career where they form part of the Bridge Watch Team. Its purpose is to provide awareness of the hazards, knowledge, skills, and standards of safe working procedures leading to certification as Bridge Watch Rating in compliance with International Maritime Organization's (IMO) Standards of Training, Certification, and Watchkeeping (STCW) 1978, as amended by STCW 1995 and Transport Canada Marine Safety TP10936E.

Organization and the Working Structures of Sea Going Vessels; Types and Classes of Vessels; Cargo Handling Gear; Cargo Operations; General Seamanship; Shipboard Operations; Safety on Board

Lectures - 13 hours/week
Laboratories - 6 hours/week

COURSE DESCRIPTIONS

NASC 0101 (General Ship Knowledge I)

This is an introductory course intended for new entry seafarers who intend to embark upon a marine career where they form part of the Bridge Watch Team. Its purpose is to provide awareness of the hazards, knowledge, skills, and standards of safe working procedures leading to certification as Bridge Watch Rating in compliance with International Maritime Organization's (IMO) Standards of Training, Certification, and Watchkeeping (STCW) 1978, as amended by STCW 1995 and Transport Canada Marine Safety TP10936E.

Organization and the Working Structures of Sea Going Vessels; Types and Classes of Vessels; General Seamanship; Shipboard Operations; Safety on Board

Duration - 13 weeks

Lectures - 13 hours/week; 169 hours

Laboratories - 6 hours/week; 78 hours total

NASC 0201 (General Ship Knowledge II)

This is the second of two courses intended for new entry seafarers who intend to embark upon a marine career where they form part of the Bridge Watch Team. Its purpose is to provide awareness of the hazards, knowledge, skills, and standards of safe working procedures leading to certification as Bridge Watch Rating in compliance with International Maritime Organization's (IMO) Standards of Training, Certification, and Watchkeeping (STCW) 1978, as amended by STCW 1995 and Transport Canada Marine Safety TP10936E.

Cargo Handling Gear; Cargo Operations; General Seamanship

Prerequisites - NASC 01XX (General Ship Knowledge I)

Duration - 4 weeks

Lectures - 13 hours/week; 52 hours total

Laboratories - 6 hours/week; 24 hours total

NASC 1100 (Orientation to Cargo Operations and Navigation)

An introductory course designed to explore the key aspects of a deck officer's responsibility, namely navigation and cargo operations.

Navigation/Chartwork; Cargo Operations

Duration - 5 weeks

Lectures - 12 hours/week

NASC 1101 (Introduction To Ships)

This is an introductory course designed to provide the student with an orientation to the Marine industry and the types of ships that are commonly encountered during a seagoing career. The course will provide the student with a basic vocabulary related to ships and equipment, an introduction to typical shipboard routines and an overview of lookout duties including an introduction to the Collision regulations. A detailed analysis of the requirements of the Cadet Log Book will also be undertaken.

Introduction/Business of Shipping; Terminology; General Arrangements/Equipment; Rules of the Road; Cadet Log Book; Shipboard Routines

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

NASC 1102 (Basic Shipboard Rules)

This is an entry level course which will develop linkages between theoretical and practical seamanship.

Practical Training for Deck Personnel; Rope, Wire, Chains, and Tackles; Confined Space Awareness

Duration - 5 weeks

Lectures - 9 hours/week

Laboratories - 14 hours/week

NASC 1104 (Seamanship I)

This is an introductory course designed to provide the student with an orientation to the marine industry and the types of ships that are commonly encountered during a seagoing career. The course will provide basic seamanship knowledge about ship terminologies, navigation publications and stability.

Introduction/Business of Shipping; Organizational Structure Onboard Ships; Terminology; General Arrangements; Stability; Anchor and Shackles; Cargo Handling Equipment; Mooring; Navigation; Bridge Equipment Onboard Ships; Soundings

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

NASC 1204 (Seamanship II)

This course follows Seamanship I and is designed to provide the student with knowledge of basic ship operations. A detailed analysis of the requirements of the Cadet Log Book will also be undertaken.

Introduction to Navigation; Introduction to Collision Regulation; Watchkeeping Duties; Flags; Rope Wire and Tackle; Maintenance and Corrosion Prevention Procedures; Principles of Ship Handling; Pollution Prevention; Log Books; Cadet Log Book

Prerequisites - NASC 1104 (Seamanship I)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

NASC 1303 (Shipboard Skills)

This course will build upon the knowledge gained in Seamanship Level 1 and Seamanship Level 2 courses to support practical shipboard skill development.

Practical Training for Deck Personnel; Rope, Wire, Chains, and Tackles; Fall Arrest Training

Prerequisites - NASC 1204 (Seamanship Level II)

Duration - 5 weeks

Lectures - 3 hours/week

Laboratories - 14 hours/week

NASC 2101 (Stability I)

This is a course designed to develop learners' ability to perform basic stability calculations with emphasis on practical skills, to extract data from hydrostatic curves, and to perform calculations related to ships draft, list, trim, and centre of gravity.

Principal Ship Dimensions & Hull Terminology; Draft, Trim, Density & Displacement; Coefficients of Hull Form & Hydrostatic Data; TPC & FWA; Centre of Flotation; Volume and Displacement; Buoyancy and the Centre of Buoyancy; Centre of Gravity; Free Surface; Adding and Shifting Masses; List; Moment to Change Trim; Stability Data Booklet.

Prerequisites - MATH 1211 (NASC Mathematics II); PHYS 1200 (Physics); NASC 1104 (Seamanship I)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

NASC 2102 (Navigation Systems - SEN 1A1)*

NASC 2102 is the first of three SEN courses which the student must complete to obtain a credit in the Nautical Science Diploma of Technology Program and a Canadian Watchkeeping Mate Certificate. The purpose of NASC 2102 is to provide the student with the knowledge and the skill required for the correct operation of navigational equipment and radar to avoid collision or close quarter situations.

***Successful completion required as partial requirement for SEN I (Transport Canada) credit.**

Radar; Automatic Radar Plotting Aid (ARPA); Radar Plotting

Prerequisites - NASC 1303

Co-requisite - NASC 2108 (Navigation)

Duration - 13 weeks

Lectures - 5 hours/week for 13 weeks = 65 hours total

Laboratories - 2 hours/week for 13 labs = 26 hours total

NASC 2103 (Seamanship)*

This course is designed to give students and in-depth knowledge and practical understanding of work aboard a ship, thus enabling them to become an efficient and effective cadet. The concepts taught here will form the basis for further studies in seamanship.

***In order to get a credit for NASC 2103 (Seamanship) a pass must be obtained in the Morse Light section of the course**

Ships; Deck Appliances; Lifting Gear; Rope, Wire and Chain; Advanced Rigging; International Code of Signals; Morse Code

Prerequisites - WKTm 1102 (Sea Phase I - Nautical Science)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 1 hour/week

NASC 2104 (Principles of Cargo Operations & Navigation)

This course is designed to build on the basic knowledge acquired in NASC 2112 (Introduction to Cargo Operations) and to give the student an advanced understanding of the principles and practices of cargo operations.

IMDG Code; Deck Cargo Safety Code; General Cargo Vessels; Bulk Carriers; Oil Tankers; Container Ships; Code of Safe Practice for Solid Bulk Cargoes; Refrigerated Cargoes; Palletization of Cargo; Bulk Grain; Grain Loading Regulations; Coal Cargoes

Prerequisites - NASC 2112 (Introduction to Cargo Operations)

Duration - 13 weeks

Lectures - 4 hours/week - 52 hours total

NASC 2107 (Radio Operator's Certificate - Maritime Commercial)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using the Global Maritime Distress and Safety System, as outlined in the International Maritime Organization's Resolution A 769 (18).

Restricted Operators Certificate - Maritime Commercial; Radiotelephony Communications Procedures; Radiotelephony Operating/Voice Procedures; Digital Selective Calling (DSC); Navigational Telex (NAVTEX); Emergency Position Indicating Radio Beacon (EPIRB) and Search and Rescue Radar Transponder (SART); Power Supplies and Maintenance

Prerequisites - None

Duration - 3 days - 21 hours

Lectures - 12 lecture /9 practical

NASC 2108 (Navigation)

This is an introductory course in the fundamentals of the theory and practice of navigation. It is essential to have a sound knowledge of the basic skills of navigation and the ability to apply this knowledge, despite the many technological advances in marine navigation.

Navigation; The Terrestrial Sphere; The Nautical Chart; Nautical Chart Symbols and Abbreviations; The Compass; Direction; Navigational Aids; Obtaining a Position Line; Position Fixing; Current and Leeway; Tides and Tidal Streams; Publications;

Prerequisite - NASC 1204 (Seamanship II); MATH 1111 (NASC Mathematics I)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 6 hours/week = 78 hours

COURSE DESCRIPTIONS

NASC 2112 (Introduction to Cargo Operations)

This course is designed to build knowledge about cargo operations onboard merchant vessels.

Ventilation, Ventilation Systems and Cargo Care; Cargo Stowage, Space Occupied, and Prevention of Damage; Securing Cargoes; Procedures for Receiving, Tallying and Delivering Cargo; Cargo Officer; Care of Cargo during Carriage; Loading Stowage and Discharge of Heavy Weights; Requirements Applicable to Cargo-handling Gear; The use of Vector Diagrams to Calculate Stresses on Cargo Gear; Cargo Calculations

Prerequisite - NASC 1204 (Seamanship II)

Duration - 13 weeks

Lectures - 3 hours/week = a total of 39 hours

Laboratories - 0 hours/week = a total of 0 hours

NASC 2200 (Navigation)

Celestial Navigation may be defined as the art and science of determining a ship's position through observation of the celestial bodies - the sun, moon, planets, and stars. The instrument used to observe the heavenly bodies, the sextant, is symbolic of the history and tradition of the navigator. Although presently somewhat overshadowed by electronic systems, celestial navigation remains a basic and widely used procedure for determining position at sea.

This is an introductory course in celestial navigation. The emphasis will be on developing an in depth knowledge of the theory and terminology associated with nautical astronomy.

Sailings; Nautical Astronomy; The Celestial Sphere; The Sextant; Altitude Correction; Time; The Marine Chronometer; The Nautical Almanac; Figure Drawings; Amplitudes, Azimuths, and Twilight; Body Identification; The Sailings

Prerequisite - NASC 2108 (Navigation)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 3 hours/week

NASC 2201 (Basic Tanker Safety)

This is an introductory level course designed for non-certified ratings so that they may understand the hazards associated with working in a tanker environment. It also provides them with the knowledge required to work safely in this environment. This course meets and/or exceeds the standards set down in Transport Canada TP 8129E.

Petroleum Tanker Design and Construction; Applied Science; Cargo Handling Systems; Operating Procedures; Inert Gas Systems; Crude Oil Washing; Safety in Tank Cleaning and Gas Freeing; Oil Pollution (Sea and Air); Fire Fighting; Emergency Procedures; Regulations and Codes of Practice; Safety Practices and Equipment; Health Issues; Safety in Terminal Operations; Environmental Response.

Prerequisites - NASC 2104 (Principles of Cargo Operations & Navigation); WKTM 1102 (Sea Phase I - Nautical Science)

Duration - 28 hours (4 days)

Theory - 24 hours

Practical - 4 hours

NASC 2202 (Navigation Systems - SEN 1A2)*

NASC 2202 is the second of three SEN courses which the student must complete to obtain a credit in the Nautical Science Diploma of Technology Program and a Canadian Watchkeeping Mate Certificate. The purpose of NASC 2202 is to provide the student with the knowledge and the skill required for the correct operation of navigational equipment.

***Successful completion required as partial requirement for SEN I (Transport Canada) credit.**

Satellite Positioning Systems; Loran-C; Gyro Compass; Auto Pilot and Course Recorders; Echo Sounder; Logs; Voyage Data Recorders (VDR); Automatic Identification System (AIS)

Prerequisite - NASC 2102 (Navigation Systems-SEN 1A1)

Duration - 13 weeks

Lectures - 3 hours/week for 13 weeks = 39 hours total

Laboratories - 2 hours/week for 13 labs = 26 hours total

NASC 2203 (Seamanship)

This course is designed to further a cadet's knowledge and practical understanding of work aboard a ship in preparation for becoming an efficient, effective junior officer. The concepts taught here will form the basis for further studies in seamanship.

Principles of Ship Handling; Anchoring; Mooring; Towing; Offshore Supply Vessel Operations; Navigating in Locks

Prerequisite - NASC 1102 (Basic Shipboard Rules); WKTM 1102 (Sea Phase I – Nautical Science)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 1 hour/week

NASC 2207 (Navigation Safety and Communications)

This course in Navigation Safety and Communications covers the International Regulations for Preventing Collisions at Sea with Canadian modifications as contained in Transport Canada's TP 10739. It includes IMO's basic watchkeeping principles and recommendations as stated in the STCW Code sections A-VIII/2 and B-VIII/2. The course includes the International Code of Signals with Morse Code and emphasizes the importance of the proper use of IMO's Standard Marine Communication Phrases. Also covered in the course is the use of Radio Aids to Marine Navigation and Annual Edition of Notices to Mariners.

General; Steering and Sailing Rules; Lights and Shapes; Sound and Light Signals; Distress Signals; Exemptions and Canadian Provisions; Positioning and Technical Details of Lights, Shapes and Sound Signal Appliances; Additional Signals for Fishing Vessels Fishing in Close Proximity; Standard Watchkeeping Procedures and Practices; International Code of Signals; Morse Code; IMO's Standard Marine Communication Phrases; Radio Aids to Marine Navigation; Annual Edition of Notices to Mariners

Prerequisite - WKTM 1102 (Sea Phase I)

Duration - 13 weeks

Lectures - 5/0 hours per week

ASC 2300 (Navigation Systems - SEN)*

NASC 2300 is the third part of three-part mandatory safety related course credit which the student must complete to obtain a credit in the Nautical Science Diploma of Technology Program and the Canadian Watchkeeping Mate Certificate. Students experience proper bridge watchkeeping practices and procedures on a blind pilotage simulator.

A simulated course designed for ship's officers in order to execute proper bridge watchkeeping on board ships.

*** Successful completion will satisfy the requirements for SEN I (Transport Canada) credit.**

Radar Simulator's Ownship's Controls and Characteristics (IMO); Review of Plotting Skills (Basic Radar); Bridge Navigational Watch; Open Water Navigation (IMO); Operational use of ARPA; Coastal Water Navigation; and Navigate in or near Traffic Separation Schemes

Prerequisite - NASC 2202 (Navigation Systems - Sen)
Simulation - 70 hours (minimum of 10 days)

NASC 2305 (Radio Communication Protocols)

This course provides participants with the knowledge and practical skills to effectively operate and communicate using Radio/Inmarsat Communication System(s) in accordance with the fundamental recommendations for training of maritime radio personnel as outlined in the International Maritime Organization's Resolution A.703(17).

Radio/Inmarsat Communication System Theory; Practical Radio Communication Operations on MF/HF; Practical Inmarsat Communication Procedures on Inmarsat B, C, and Fleet 77

Co-requisite - NASC 2107 (Restricted Operator's Certificate - Maritime Commercial)

Duration - 2 days

Lectures/Practical Exercises - 7 hours/day = 14 hours

NASC 2306 (Electronic Chart Display and Information Systems) (ECDIS)

The purpose of this course is to provide training for students in the seaoperation of Electronic Chart Display and Information Systems (ECDIS).

ECDIS Definitions, Concepts and Related Authorities; Legal Aspects and Requirements; Principle Types of Electronic Charts; ECDIS Data; Presentation of ECDIS Data; Sensors; Basic Navigational Functions and Settings; Specific Functions for Route Planning; Specific Functions for Route Monitoring; Updating; Display and Function of Other Navigational Information; Errors of Displayed Data; Errors of Interpretation; Status Indications, Indicators and Alarms; Documentation; Integrity Monitoring; Back-Up; Risk of Over-Reliance on ECDIS; Proficiency Demonstration.

Prerequisites - NASC 2108 (Navigation) or Pass or Completion of Chartwork and Pilotage (C&P2)

Duration - 5 days (30 hours);

Theory - 10 hours

Practical - 20 hours*

* Maximum of 1 participant per ECDIS unit

NASC 2307 (Communications)

This course is designed to provide students with the knowledge and skills necessary to use the International Code of Signals, extract a variety of necessary information from the Canadian publications Radio Aids to Marine Navigation and Notices to Mariners – Annual Edition, send and receive signals by Morse light, and use IMO's Standard Marine Communication Phrases. International Code of Signals; Publications; Morse Code; Standard Marine Communication Phrases

Prerequisites - NASC 1204 (Seamanship II)

Duration - 30 hours

Lectures - 3 hours/day for 5 days = 15 hours total

Laboratories - 3 hours/day for 5 days = 15 hours total

NASC 3100 (Navigation)

This advanced course in navigation develops the student's ability to analyze and to solve problems connected with the safe and economic conduct of a passage. The aim of this course is to develop an understanding of chartwork and pilotage up to and beyond that required for the Watchkeeping Mate Certificate of Competency.

Navigation Procedures; Advanced Chartwork; The Magnetic Compass; Pilotage; GPS; and Navigation Passage Making/ Planning

Prerequisites - NASC 2108 (Navigation); WKTM 1102 (Sea Phase I - Nautical Science)

Duration - 13 weeks

Lectures - 4 hours/week

Laboratories - 4 hours/week

NASC 3101 (Navigation Safety - Collision Regulations)

This course in Navigation Safety covers the Collision Regulations TP 10739 and the Recommended Code of Nautical Procedures and Practices. (It includes the IMO's Basic Watchkeeping Principles)

General; Steering and Sailing Rules; Lights and Shapes; Sound and Light Signals; Distress Signals; Exemptions and Canadian Provisions; Details of Sound and Light Signals; Code of Nautical Procedures and Practices

Prerequisite - WKTM 1102 (Sea Phase I - Nautical Science)

Duration - 5 weeks

Lectures - 15 hours/week

COURSE DESCRIPTIONS

NASC 3102 (Cargo Operations)

This course is designed to build on previous courses to increase the student's knowledge and understanding of cargo and cargo operations in a practical sense.

Ro-Ro Vessels; Self-unloading Bulk Carriers; Liquefied Gas Carriers; Chemical Tankers; Passenger Vessels; Timber Deck Cargoes; Timber Deck Cargo Code; Timber Deck Cargo Regulations; Livestock; Coal Cargoes; Voyage Planning and Loadline; Port Wardens; Cargo Surveys; Cargo Liner Trade; and Future Trends; Tank and Hold Inspection

Prerequisite - NASC 2104 (Principles of Cargo Operations & Navigation)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

NASC 3103 (Seamanship)

This course deals with advanced topics in seamanship and is designed to build on both the sea phase experience of the student as well as other courses in this series covering seafaring skills. Like the other courses in the series, it is meant to prepare the student to become a professional seafarer and an officer.

Shipboard Emergencies (At Sea and In Port); Search and Rescue Operations; Ice Navigation; SOLAS 1974 as amended (The International Convention for the Safety of Life at Sea)

Prerequisite - NASC 2203 (Seamanship)

Duration - 13 weeks

Lectures - 2 hour/week

Laboratories - 1 hour/week

NASC 3108 (Stability II)

This course builds on the basic theory offered in Stability I (NASC 2101) to develop students' ability to understand the principles governing small and large angles and intact stability. Practical skills to solve onboard ship stability problems are developed. The elements of Dynamic Stability are discussed and the IMO's Intact Stability Requirements are covered.

The Metacentre and Metacentre Height; Small Angle Stability; Cross Curves; Large Angle Stability; Trim and Stability Assessment; Dynamical Stability; Special Criteria for Certain Ships; Considerations for Watertight Integrity; Practical Calculations Using M/V Atlantic Vision and M/V Gypsum Centennial

Prerequisite - NASC 2101 (Stability)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

NASC 3200 (Navigation)

The aim of this course is to develop an understanding of practical navigation to a level required for all ocean and offshore navigation on board ship. Navigation principles are briefly revisited to ensure the student is fully conversant with the theoretical knowledge covered in other courses.

Navigation Principles; Latitude and Time of Meridian Passage; Latitude by Polaris; Position Lines and Position Circles;

Ex-Meridian Method of Sight Reduction; Longitude by Chronometer; Sight Reduction Tables and Sight Planning

Prerequisites - NASC 2200 (Navigation); WKTM 2102 (Sea Phase II - Nautical Science)

Duration - 13 weeks

Lectures - 5 hours/week

Laboratories - 5 hours/week

NASC 3201 (GMDSS)

This is a comprehensive course which enables radio station personnel, ashore and afloat, operating in accordance with the Global Maritime Distress and Safety System (GMDSS) to utilize efficiently all aspects of the GMDSS communications matrix. In addition, this course adheres to the fundamental recommendations for training of maritime radio personnel as outlined in the International Maritime Organization's Resolution A.703(17).

The Global Maritime Distress and Safety System (GMDSS); Regulations and Publications Pertaining to the GMDSS; Radio Theory; Practical Radio Communication Operations on VHF/MF/HF; Digital Selective Calling (DSC); Practical DSC Procedures on VHF/MF/HF; Inmarsat; Practical Inmarsat Communication Procedures on Inmarsat A and C; Enhanced Group Calling (EGC) Telex Over Radio (TOR); NAVTEX; Power Supplies & Maintenance; Emergency Position Indicating Radio-Beacon (EPIRB); Search and Rescue Radar Transponder (SART)

Prerequisite - NASC 2107 (Restricted Operator's Certificate -Maritime Commercial)

Duration - 10 days

Lectures/Practical Exercises - 6.5 hours/day = 65 hours total

NASC 3208 (Stability III)

This advanced level course links stability theory with practical applications. Drawing on the student's knowledge of cargo operations and vessel stability criteria, this course will, through calculations, enhance the student's ability to optimize cargo distribution and to provide adequate static and dynamical stability for a vessel's safe passage..

Damage Stability; Grounding and Docking; Pressure Exerted by a Liquid; Vessel Stresses; Longitudinal Strength; M. V. Atlantic Vision and M.V. Gypsum Centennial; Ship Motions; Cargo Loading and Stress Measuring Instruments and Software

Prerequisites - WKTM 2102 (Sea Phase II - Nautical Science); NASC 3108 (Stability)

Duration - 13 weeks

Lectures/Work Periods - 4 hours/week = 52 hours total

NASC 3300 (Seamanship)

This course is designed to give students an advanced knowledge and understanding of the techniques required to be an efficient and responsible ship handler, and to prepare students to be observant cargo officers who are prepared to make cargo lashing adjustments if and when necessary.

Ship Handling; Heavy Lifts and Cargo Lashing; On Board Practical Training

Prerequisites - NASC 3103 (Seamanship); WKTM 2102 (Sea Phase II - Nautical Science)

Duration - 5 weeks

Lectures/Laboratories - 9 hours/week

NASC 3303 (Bridge Watchkeeping)

Bridge watchkeeping is the most important activity conducted at sea. The Officer of the Watch (OOW) is the Master's representative and is responsible for the security of the ship and all those aboard. The OOW needs to be proficient in navigation, have a fluent understanding of the Collision Regulations, know how to use the radar/ARPA, be familiar with the bridge instruments, know the ship and its routines, be able to respond to emergencies, handle communications, maintain records correctly and be able to work as a member of the bridge team. This course provides students with an opportunity to build on previous knowledge and training and to practice watchkeeping skills in a simulated environment.

Introduction; Manoeuvring Data; Bridge Organization; Voyage Preparation; Officer of the Watch (OOW); Emergencies; Simulation

Prerequisites - WKTM 2102

Duration - 8 days (56 hours)

OMAP 2000 (Underwater Acoustic Applications)

This course is designed to introduce students to the principles and applications of acoustic remote sensing with specific emphasis on its utilization in the marine environment.

Introduction; Principles; Applications

Prerequisites - None

Duration - 13 weeks

Lectures - 2 hours/week = 26 hours total

Laboratories - 2 hours once per week x 10 weeks = 20 hours total

OMAP 2200 (Side Scan Sonar and Geophysical Remote Sensing)

This course provides the student with an introduction to the theoretical, technical and practical application of Side Scan Sonar and Geophysical Remote Sensing systems and techniques. The course will be taught using modern equipment and methodologies, allowing the student to better understand the benefits and limitations associated with this technology, from data acquisition to data dissemination.

Introduction to Side Scan Sonar; Fundamentals of Underwater Acoustics; Side Scan Sonar Fundamentals; Side Scan Sonar Survey Techniques; Trends in Side Scan Sonar Technology; Introduction to Sub Bottom Profiling; The Sub Bottom Record; Return Signal Amplification; Sub Bottom Profiler Design Characteristics; Underwater Acoustic Environments; Sub Bottom Profiler Data Interpretation; Trends in Sub Bottom Profiler Technology; Introduction to Magnetometers; Principles of Magnetometer Surveys; Magnetic Survey Data; Magnetic Survey Problems; Combined Side Scan Sonar and Magnetometer Surveys; Side Scan Sonar and Magnetometer Towing Best Practices; Introduction to Marine Gravimetry

Prerequisites - OMAP 2000 (Underwater Acoustics Applications)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - hours/week = 26 hours

OMAP 2201 (Multibeam Sonar)

This course provides the student with an introduction to the theoretical, technical and practical application of multibeam sonar systems and techniques. The course will be taught using modern equipment and methodologies, allowing the student to better understand the benefits and limitations associated with this technology, from data acquisition to data dissemination.

Introduction to Multibeam Sonar; Fundamentals of Multibeam Echosounding; Seabed Bathymetry and Acoustic Backscatter; Multibeam Echosounding Process; Multibeam Echosounding Methods; Multibeam Echosounder System Installation; Multibeam Echosounding Survey Design; Future Trends in Multibeam Echosounding Technology

Prerequisites - OMAP 2000 (Underwater Acoustics Applications)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - hours/week = 26 hours

OMAP 2300 (Field Deployment and Data Collection)

This is a practical field course on-board a hydrographic survey vessel. It is designed to give students the experience of safely deploying and operating hydrographic data collection systems. Students will collect, evaluate, and format hydrographic data for the post-processing delivery stage.

Marine Safety and Vessel Orientation; Vessel Navigation; Calibration of Data Collection Systems; Single Beam Sonar Data Collection; Sub Bottom Data Collection; Side Scan Sonar Data Collection; Multibeam Sonar Data Collection; Data Delivery

Prerequisites - OMAP 2200 (Side Scan Sonar and Geophysical Remote Sensing); OMAP 2201 (Multibeam Sonar)

Co-Requisites - OMAP 2301 (Data Processing and Visualization)

Duration - 35 hours (5 days)

OMAP 2301 (Data Processing and Visualization)

This course provides the student with the practical application of the technical capabilities associated with hydrographic data processing and visualization. It will be taught within a variety of analysis environments, offering an avenue for the student to become exposed to the elements required to process, analyze, visualize and disseminate a professional product.

Single Beam Echosounder Data Processing; Sub Bottom Profiler Data Processing; Side Scan Sonar Data Processing; Uncertainty Surface Production; Metadata Attribution; Statistical Analysis; Data Visualization and Dissemination

Prerequisites - OMAP 2200 (Side Scan Sonar and Geophysical Remote Sensing); OMAP 2201 (Multibeam Sonar); GEOG 3101 (Mapping and GIS) or equivalent

COURSE DESCRIPTIONS

Co-Requisites - OMAP 2300 (Field Deployment and Data Collection)

Duration - 49 hours (7 days)

OMAP 3100 (Shipboard System Integration)

This course provides the student with an introduction to typical mobilization practices necessary to integrate offshore surveying equipment and systems on board a marine survey vessel.

The course will be taught with reference to proper installation practices used for many of the surveying systems required to conduct a typical offshore oceanographic/hydrographic survey. This will serve as a framework that students can use to ensure proper system function and integration necessary for safe and efficient conduct of field operations.

Prerequisites - ELTK 1200 (Electrotechnology);

ELTR 2118 (Intro to Computer Networking)

Lectures - 3 hours/week = 39 hours

Laboratories - hours/week = 26 hours

OMAP 3101 (System Performance)

This course provides the student with the ability to understand and quantify the capabilities and limitations of hydrographic data collection systems.

Principles of Measurements and Associated Errors; Fundamentals of Total Propagated Uncertainty; Review of Acoustic Principles; System Parameter Definitions; Positioning and Attitude System Performance; Water Level Measurement System Performance; Oceanographic Measurement System Performance; Mechanical Depth Measurement System Performance; Single Beam Sonar System Performance; Sub Bottom Profiling System Performance; Sidescan Sonar System Performance; Bathymetric Sidescan Sonar System Performance; Multibeam Sonar System Performance; Optical Depth Measurement System Performance; Future Performance of Hydrographic Data Collection

Prerequisites - OMAP 2000 (Underwater Acoustics Applications); OMAP 2200 (Sidescan Sonar and Geophysical Remote Sensing); OMAP 2201 (Multibeam Sonar)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - hours/week = 26 hours

OMAP 3200 (International Law of the Sea: Geomatics Perspective)

This course will familiarize students with the technical aspects of the United Nations Convention on the Law of the Sea (UNCLOS). Students will apply Geomatics principles in definitions of aselines, territorial seas, the EEZ, and the definition of the continental margin as defined in UNCLOS.

Introduction to United Nations Convention on the Law of the Sea (UNCLOS); Baselines; Outer Limits; Bilateral Boundaries; The Area; Hydrography and Law

Prerequisites - GEOG 1300 (Surveying and GPS); or equivalent

Duration - 13 Weeks

Lectures - 3 hours/week = 39 hours

OMAP 3201 (Applications of Underwater Acoustic Data)

This course will provide the student with a basic knowledge of the scientific, engineering, military, and resources management-related uses of underwater acoustic data. Students will be exposed to the terminology, concepts and background related to the various disciplines that are currently using underwater acoustic data. Students will develop a general understanding of the needs of various consumers of underwater acoustic data and will be informed on current research trends and engineering applications of the technology. Students will also learn to independently carry a small research project using acoustic data.

The Development of Underwater Acoustics; Scientific Applications of Underwater Acoustic Data; Engineering Applications of Underwater Acoustic Data; Resource Management Applications of Underwater Acoustic Data; Military Applications of Underwater Acoustic Data; Future Directions in Underwater Acoustic Data Application

Prerequisites - ONGR 1200 (Descriptive Oceanography); or equivalent; ONGR 2107 (Marine Geology and Geophysics); or equivalent; OMAP 2200 (Sidescan Sonar and Seismic Remote Sensing); or equivalent; OMAP 2201 (Multibeam Sonar); or equivalent

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

Laboratories - 2 hours once per week = 26 total hours

OMAP 3300 (Survey Design and Implementation)

This is a practical field course on-board a hydrographic survey vessel. Students will experience planning and managing a hydrographic survey. Students will build upon the skills gained in OMAP 2300 through further experience in safely deploying and operating hydrographic data collection systems. Students will collect, evaluate, and format hydrographic data for the post-processing delivery stage.

Marine Safety and Vessel Orientation; Hydrographic Survey Planning; Vessel Navigation; Calibration of Data Collection Systems; Single Beam Sonar Data Collection; Sub Bottom Profiler Data Collection; Side Scan Sonar Data Collection; Multibeam Sonar Data Collection; Shoreline Feature Positioning; Data Delivery

Prerequisites - OMAP 2300 (Field Deployment and Data Collection); OMAP 2301 (Data Processing and Visualization)

Co-requisite - OMAP 3301 (Advanced Data Processing and Visualization)

Duration - 7 hours/day for 5 days

OMAP 3301 (Advanced Data Processing and Visualization)

This course builds upon knowledge and skills gained in OMAP 2301 and provides the student with opportunities for further practice and advanced application of the technical capabilities associated with acoustic data processing and visualization.

Single Beam Echosounder Data Processing; Sub Bottom Profiler Data Processing; Side Scan Sonar Data Processing; Multibeam

Echosounder Data Processing; Uncertainty Surface Production; Positioning Data Processing; Metadata Attribution; Statistical Analysis; Data Visualization and Dissemination

Prerequisites - OMAP 2300 (Field Deployment and Data Collection); OMAP 2301 (Data Processing and Visualization)
Co-requisite - OMAP 3300 (Survey Design and Implementation)
Duration - 7 hours/day for 5 days

OMAP 3400 (Ocean Mapping Data Management)

This course is designed to provide students with the opportunity to develop an understanding of marine data collection and management. It will encompass the vast array of data pertaining to the dynamic marine environment. Students will produce metadata that is compliant with ocean mapping standards and will collect, interpret and disseminate temporal and spatial data sets pertaining to multidimensional marine data types.

Data Management, Marine Points, Marine Lines, Marine Surface Data, Ancillary Marine Data

Prerequisites - GEOG 3101 (Mapping and GIS); GEOG 3200 (Remote Sensing); OMAP 2200 (Side Scan Sonar and Geophysical Remote Sensing); and OMAP 2201 (Multibeam Sonar)

Duration - 13 weeks
Lectures - 3 hours per week = 39 total hours
Laboratories - 2 hours once per week = 26 total hours

OMAP 3500 (Advanced Tides and Water Levels)

This course provides the student with the opportunity to build upon introductory knowledge previously acquired and become familiar with advanced tides and water level theory. The student will become familiar with and be able to utilise the concepts of surface water levels and their controls including tides, waves and swells and vertical reference surfaces. The design of vertical measurement systems using advanced GPS techniques will also be covered as well as an introduction to coastal hydrodynamic modelling as it relates to vertical surfaces.

Vertical Datums and Reference Surfaces; Tide Generation Forces; Tidal Spatial Phase and Amplitude Variations; Tidal Constituents; Development of Tidal Predictions; Non Tidal Sea Level Variation; Establishment of Tidal Datums; Tidal Zoning; Water Level Measurement Systems Design and Use; GPS Water Level Measurement Systems Design and Use; Spacebased Water Level Measurement; Introduction to Coastal Hydrodynamic Modelling

Prerequisites - ONGR 1300 (Hydrography and Tides)
Duration - 13 weeks
Lectures - 3 hours per week = 39 total hours
Laboratories - 2 hours once per week = 26 total hours

ONGR 1200 (Descriptive Oceanography)

This course is designed to introduce students to the physical principles that create oceanographic processes and to provide an integrated view of the whole field of oceanography. A theoretical introduction to the equipment used in ocean research will be provided.

Introduction to Oceanography; Physical Properties of the Ocean; Chemical Properties of the Ocean; Biological Properties of the Ocean; Atmospheric Effects; Currents; Waves; Tides.

Co-requisite - PHYS 1200 (Physics)
Duration - 13 weeks
Lectures - 3 hours/week = 39 hours total

ONGR 1201 (Meteorology I)

This is an introductory course which teaches fundamental meteorological theory and links the concepts to shipboard practice.

The Atmosphere; Transfer of Heat; Temperature; Atmospheric Moisture and Changes of State; Atmospheric Instability/Stability; Fog; Clouds; Precipitation; Thunderstorms; Pressure and Pressure Systems; Winds and Weather Charts.

Duration - 13 weeks
Lectures - 4 hours/week = 52 hours total
Laboratories - 2 hours/week every other week = 12 hours total

ONGR 1300 (Hydrography and Tides)

This course is designed to provide students with an understanding of hydrographic survey specifications and planning with respect to tide and water levels. It will introduce students to the principles and characteristics of tidal influence in hydrographic surveys. Also, the course will provide students with practical operation of instruments used for sea level measurement.

Introduction to Hydrography; Tides and Water Levels; Water Level Flow and Tidal Currents; Vertical Datums; Harmonic Analysis and Tide Prediction; Instruments for the Measurement of Sea Level

Duration - 5 weeks
Lectures - 3 hours/week
Laboratories - 2 hours/week

ONGR 1301 (Instrumentation Oceanography)

This course is designed to introduce students to the application of oceanographic data collection including configuration and deployment of appropriate instrumentation packages, as well retrieval and analysis of the data collected.

Introduction to Oceanographic Measurement Instruments; Introduction to Maps and Projections; Oceanographic Data Collection; Oceanographic Data Analysis; Plotting and Presenting Data on Map Projections

Duration - 5 weeks
Lectures - 4 hours/week
Laboratories - 6 hours/week

ONGR 2100 (Hydrography)

An introductory course which explores the field work of the hydrographic surveyor and introduces the student to the complexities involved in producing a finished nautical chart.

Introduction; Plane Surveying; Geodesy; Projections

COURSE DESCRIPTIONS

Prerequisites - NASC 1204 (Seamanship II)

Co-requisite - NASC 2108 (Navigation)

Duration - 13 weeks

Lectures - 1 hour/week

Laboratories - 2 hours/week

ONGR 2101 (Oceanography)

This is an introductory course which acquaints the student with fundamental physical, chemical and biological oceanographic concepts.

Physical Oceanography; Chemical Oceanography; and Biological Oceanography

Prerequisites -WKTM 1102 (Sea Phase I - Nautical Science); Technical Session II - NASC 2107 (Restricted Operator's Certificate - Maritime Commercial); NASC 2201 (Basic Tanker Safety); NASC 3101 (Navigation Safety - Collision Requirements)

Duration - 13 weeks

Lectures - 3 hours/week

ONGR 2103 (Oceanography)

An introductory oceanography course designed to cover a variety of topics with emphasis on physical and coastal oceanography and the practical skills necessary to sample this environment.

Composition of the Oceans; Physical Oceanography; Coastal Processes; and Atmosphere and Climate

Duration - 13 weeks

Lectures - 2 hours/week = 26 total hours

Laboratories - 2 hours once per week = 26 total hours

ONGR 2107 (Marine Geology and Geophysics)

This course provides the student with an introduction to the fundamentals of marine geology and geophysics. Emphasis will be placed on the geological and geophysical processes that shape the ocean basins and continental margins including the means to acquire, analyze, interpret and disseminate the data.

An Introduction to Geology; Marine Geology; Marine Geophysics; Geotechnical Capabilities

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

ONGR 2300 (Instrumentation Oceanography)

This course is designed to introduce students to the physical and chemical principles that create oceanographic processes with a special emphasis on the equipment used in ocean research.

Introduction to Oceanography; Introduction to Maps and Projections; Properties of the Ocean; Ocean Sediment; Atmospheric Effects; Currents; Waves; Tides

Prerequisites - MATH 2101 (Mathematics); PHYS 1200 (Physics); FLDS 2100 (Fluids)

Duration - 5 weeks

Lectures - 8 hours/week = 40 hours total

Laboratories - 2 hours/week = 10 hours total

ONGR 3100 (Meteorology)

This course provides an introduction to fundamental meteorological theory and links the concepts to shipboard practice.

Instruments; The Atmosphere; Pressure; Temperature; Water Vapour; Clouds; Precipitation; Visibility and Fog; Wind; Temperate and Polar Zone Circulation; Tropical and Subtropical Circulation; Organization and Operation of Meteorological Services; Forecasting

Prerequisites - WKTM 2102 (Sea Phase II - Nautical Science)

Duration - 13 weeks

Lectures - 3 hours/week

ONGR 3101 (Meteorology II)

This course builds upon the knowledge and skills gained in ONGR 1201 (Meteorology 1).

Air Masses and the Planetary System of Wind and Pressure; Fronts; Families of Depressions or Extra-Tropical Cyclones; Waves and Swells; Oceanic Currents and Effect on the Climate; Tropical Revolving Storms; Ice Formation and Decay; Ice Detection and Reporting; Weather Messages and Codes; Optimum Weather Routing; Requirements; Synoptic and Prognostic Charts

Prerequisite - ONGR 1201 (Meteorology I); WKTM 2102 (Work Term 2)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours

ONGR 3500 (Weather and Climate)

The Earth's climate system has been steadily evolving since the planet's formation 4.6 billion years ago, and the climate we experience today is a result of the joint development of the atmosphere, oceans, land surface and biology (including humans). This course provides the student with a basic understanding of meteorological and climatological concepts and processes. A special focus is put on the interactions between the ocean, the atmosphere, weather and climate at various spatial and temporal scales.

The Atmosphere; Heat Budget and Temperature; Humidity and Condensation; Air Pressure and Wind; Air Masses, Fronts and Weather Systems; Extreme weather; Global Climate and Earth's Changing Climate; Forecasting

Prerequisite - ONGR 1200 (Descriptive Oceanography)

Duration - 13 weeks

Lectures - 3 hours per week = 39 total hours

ONGR 4101 (Coastal Oceanography and Geomorphology)

This is an introductory course on General Oceanography and Geomorphology designed to provide the participants with an integral view of the physical-chemical, biological and geological components of the ocean and its interaction with the continent in the structuring of the coastal zones. It will also review the interactions of ocean-atmosphere in the generation of climate.

Physical-Chemical Oceanography; Biological Oceanography; Ocean Dynamics; Ocean-Atmosphere Interaction; Oceanographic Data Collection and Analysis; Geological Structure of the Continents and Oceans; Erosional and Depositional Shores; Man made Alterations of the Coastline

Duration - 13 weeks

Lectures - .3 hours/week

Tutorials - 1 hour/week

ONGR 4104 (Coastal Oceanography & Climatology)

This is an introductory course on general oceanography and climatology designed to provide the participants with an integral knowledge of the physical and chemical components of the ocean and its interaction with coastal areas of the continent. It will also review many aspects of climatology and the impacts they have on ocean characteristics.

Properties of Water and Seawater; Geological Structure of the Ocean Floor; Seafloor Sediments; Climate and Weather; Atmospheric and Ocean Circulation; Tropical Storms and Hurricanes; Ocean Waves; Tides

Duration - 52 hours

Lectures - 39 hours (3 hours/week)

Tutorials - 13 hours (1 hour/week)

ONGR 4300 (Coastal Geomorphology)

This is an introductory course on Coastal Geomorphology designed to provide the participants with an integral view of the forces, both past and present, which interact with the coast and its features and are responsible for its dynamic physical appearance.

Introduction to Geomorphology; Coastal Geomorphology; Coastal Erosion and Deposition; Land and Sea Level Changes; Coastal Dunes; Coral Reefs; Man-Made Alterations to the Coast.

Prerequisite - ONGR 4104 (Coastal Oceanography and Climatology)

Duration - 39 hours

PHYS 1100 (Physics)

This is an introductory Physics course designed to extend the students knowledge and understanding of basic Physics principles, concepts and applications related to mechanics. The course also extends abilities in data handling, problem solving and experimentation.

The Nature of Physics; Describing Motion, Kinematics in one Dimension; Kinematics in two Dimensions, Vectors; Motion and Force, Dynamics; Circular Motion, Gravitation; ; Rotational Kinematics; Bodies in Equilibrium; Work and Energy; Linear Momentum.

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

PHYS 1101 (Physics)

This is an introductory level Physics course designed to extend the student's knowledge and understanding of basic Physics principles, concepts, and applications. A selection of practical exercises designed to augment and extend classroom instruction will complement the course.

The Nature of Physics; Motion and Vectors; Dynamics; Work, Energy, and Power; Properties of Matter; Wave Motion; Fluid Mechanics; Heat

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

PHYS 1102 (Physics)

This is an introductory Physics course designed to extend the students' knowledge and understanding of basic Physics principles, concepts and applications related to mechanics. The course also extends abilities in data handling, problem solving and experimentation.

The Nature of Physics; Describing Motion: Kinematics in One and Two Dimensions; Dynamics: Motion and Force; Work and Energy; Bodies in Equilibrium; Linear Momentum; Rotational Dynamics; Simple Machines; Temperature, Thermal Expansion, and Thermodynamics

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week = 26 hours total

PHYS 1103 (Physics)

This is an introductory Physics course designed to extend the students' knowledge and understanding of basic Physics principles, concepts and applications related to mechanics. The course also extends abilities in data handling, problem solving and experimentation.

The Nature of Physics; Describing motion; Kinematics in one Dimension; Kinematics in two Dimensions; Vectors; Motion and Force; Dynamics; Circular Motion; Gravitation; Bodies in Equilibrium; Work and Energy; Linear Momentum.

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week = 26 hours total

PHYS 1104 (Physics)

This is an introductory Physics course designed to extend the students' knowledge and understanding of basic Physics principles, concepts and applications related to mechanics. The course also extends abilities in data handling, problem solving and experimentation.

The Nature of Physics; Kinematics: Describing Motion in One Dimension; Kinematics: Describing Motion in Two Dimensions; Dynamics: Motion and Force; Dynamics: Uniform Circular Motion and Universal Gravitation; Work and Energy; Linear Momentum; Rotational Dynamics; Bodies in Equilibrium (Statics); Simple Machines

COURSE DESCRIPTIONS

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week = 26 hours total

PHYS 1204 (Physics)

This is a second semester course designed to extend the students' knowledge and understanding of basic Physics principles, concepts and applications relating to kinetic theory, heat, vibrations, sound and light. It also extends abilities in data handling, problem solving and experimentation.

Properties of Materials; Elasticity of Materials; Vibrations; Mechanical Waves; Sound; Fluid Mechanics; Heat and Heat Transfer; Gas Laws and Kinetic Theory; Light

Prerequisite - PHYS 1100 (Physics) or PHYS 1104(Physics)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

Laboratories - 2 hours/week = 26 hours total

PHYS 1200 (Physics)

This is a second semester course designed to extend the students' knowledge and understanding of basic Physics principles, concepts and applications relating to kinetic theory, heat, vibrations, sound and light. It also extends abilities in data handling, problem solving and experimentation.

Properties of Materials; Fluid Mechanics; Vibrations and Wave Motion; Sound; Kinetic Theory; Heat and Heat Transfer; Light;

Prerequisite - PHYS 1100 (Physics) or equivalent

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 2 hours/week

QLAS 0001 (Handling and Holding of Fish and Shellfish)

This course is designed to familiarize students with the basic techniques involved in handling and holding fish and shellfish onboard a vessel.

Fisheries Overview (Newfoundland and Labrador); Basic Biology of Fish and Shellfish; Types of Fish and Shellfish Spoilage and Control; Maximizing Live and Fresh Chilled Grade I Quality Shelf-Life; Fish and Shellfish Handling and Holding Onboard Vessel and Onshore; Sanitation and Hygiene Onboard Vessel; Fish and Shellfish Handling and Holding Procedures

Duration - One week (5 days)

QLAS 0300 (Quality Assurance and Control)

This course is designed to give students an understanding of the concepts and requirements of quality assurance and control as applied to offshore steel fabrication, such as interpreting standards, controlling the acceptance of raw materials, controlling quality variables and documenting the process. It includes information on quality concepts, codes, standards, documentation, and communications.

Overview of Offshore Steel Fabrication, Quality Assurance and Control, Materials, Inspection, Requirements, Inspection Methods, QA Reports, Change Orders and Plan Approvals.

Prerequisite - Successful completion of all courses in Term 1 and Term 2

Duration - 5 weeks

Lectures - 6/0

QLAS 2104 (Food Evaluation)

This course is designed to provide an in-depth knowledge of the quality assessment techniques involved in the food industry.

Product Evaluation; Sensory Analysis; Viscosity Evaluation; Texture Evaluation; Colour Evaluation; Size, Shape, Symmetry & Style; Defects; Standards of Measurement and Calibration; Chemical Measurements

Prerequisites - FDTE 1100 (Introduction to Food Science & Technology)

Duration - 13 weeks

Lectures - 2 hours per week = 26 total hours

Laboratories - 3 hours once per week = 39 total hours

QLAS 3101 (Quality Assurance)

This course is designed to provide students with an understanding of the design and implementation of quality programs in the food industry.

Quality and The Food Industry; Quality Concepts; Quality of Design: Product; Quality of Design: Production and Processes; Quality Costs; Hazard Analysis Critical Control Point (HACCP); Food Safety Enhancement Program (FSEP); Quality Management Program (QMP); Total Quality Management (TQM); ISO22000:2005(E) Standard; British Retail Consortium (BRC) Standard

Prerequisites - FDTE 2112 (Food Sanitation); QLAS 2104 (Food Evaluation)

Co-requisites - BIOL 2202 (Microbiology); FDTE 3106 (Seafood Processing Technology)

Duration - 13 weeks

Lectures - 39 hours (3 hours/week)

Practical - 26 hours (2 hours/week)

ROVO 2200 (Introduction to ROV Systems)

This course is designed to familiarize students with the various types of ROVs and their essential system elements.

ROV Classifications; Control Cabin/Work Van Design and Function; External Generators/MG (Motor Generator) Sets; TMS (Tether Management System)/Vehicle Components and their Operating Principles

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

ROVO 2201 (ROV Operations)

This course is designed to instruct students in the proficient and safe operation of underwater robotic systems throughout their full range of subsea applications.

Basic Operations; Spheres of Operation; ROV Sub Systems Utilization

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (13 Labs) = 26 hours total

ROVO 2202 (ROV Maintenance)

This course is designed to generate within the students the ability to troubleshoot and repair any and all malfunctions which are inherent to underwater robotics technology.

Troubleshooting and Maintenance of Electrical/Electronics Hardware; Troubleshooting and Maintenance of Hydraulic/Mechanical Hardware; Preventative Maintenance Regimes.

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (13 Labs) = 26 hours total

ROVO 2204 (Launch and Recovery Systems or LARS)

This course is designed to introduce students to the basics types, operation and maintenance of Launch and Recovery systems.

Types of LARS: LARS Components and Maintenance, Lift Winches; A-frame Assembly; Control Station; Parking Platform Safety; Rigging, Slings and Hoisting and Fasteners

Prerequisites - PHYS 1100 (Physics) or PHYS 1101 (Physics); WKPR 2118 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/2week (6 Labs) = 12 hours total

ROVO 2300 (ROV Ship Interaction)

This course gives the student an introduction to dynamic positioning (DP) operations on vessels equipped with ROVs. It enables the student to understand the operation of a DP system and to assess the operation of a DP system during ROV operations.

Dynamic Positioning; Dynamic Positioning Principles; Sensors; Dynamic Positioning Applications; Coordinate Systems; Position References; Thrusters and Manoeuvring Systems; Dynamic Positioning Modes; Power Management Systems; Dynamic Positioning Operations; Regulations; Dynamic Positioning Control Console

Prerequisites - ROVO 2200 (Introduction to ROV); ROVO 2201 (ROV Operations); ROVO 2202 (ROV Maintenance); OMAP 2000 (Underwater Acoustic Application); ROVO 2204 (LARS)

Duration - 4 days (28 hours)

ROVO 2301 (ROV Pilot Training)

This course is designed to instruct the students in the methods employed to pilot an eyeball class ROV under real world situations involving static and dynamic water environments.

Basic Piloting Protocols; Task Specific Flying Exercises; Flying in Heavy Currents Scenarios

Prerequisites - ROVO 2200 (Introduction to ROV); ROVO 2201 (ROV Operations); ROVO 2202 (ROV Maintenance); OMAP 2000 (Underwater Acoustic Application); ROVO 2204 (LARS)

Duration - 42 hours

ROVO 2302 (ROV Simulator Training)

This course is designed to instruct the students in the major facets of ROV piloting.

Basic Flying Protocols in Simulated Environments; Simulated Flying Exercises

Prerequisites - ROVO 2200 (Introduction to ROV); ROVO 2201 (ROV Operations); ROVO 2202 (ROV Maintenance); OMAP 2000 (Underwater Acoustic Applications); ROVO 2204 (LARS)

Duration - 70 hours

ROVO 3100 (Introduction to ROV Systems)

This course is designed to familiarize students with the various types of ROVs and their essential system elements.

ROV Classifications; Control Cabin/Work Van Design and Function; External Generators/MG (Motor Generator) Sets; TMS (Tether Management System)/Vehicle Components and their Operating Principles

Prerequisites - Term 1 ROV Program which include: ELTK 3104 (Electrotechnology); ELTR 3117 (Fabrication); ELTR 3118 (Industrial Electronic and Controls); ELTR 3119 (Data Communications); ENGR 3100 (Blueprint Reading); FLDS 3106 (Introduction to Fluid Statics & Dynamics); FLDS 3107 (Hydraulic Controls); WKPR 3106 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

ROVO 3101 (ROV Operations)

This course is designed to instruct students in the proficient and safe operation of underwater robotic systems throughout their full range of subsea applications.

Basic Operations; Spheres of Operation; ROV Sub Systems Utilization

Prerequisites - Term 1 ROV Program which include: ELTK 3104 (Electrotechnology); ELTR 3117 (Fabrication); ELTR 3118 (Industrial Electronic and Controls); ELTR 3119 (Data Communications); ENGR 3100 (Blueprint Reading); FLDS 3106 (Introduction to Fluid Statics & Dynamics); FLDS 3107 (Hydraulic Controls); WKPR 3106 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (13 Labs) = 26 hours total

ROVO 3102 (ROV Maintenance)

This course is designed to generate within the students the ability to troubleshoot and repair any and all malfunctions which are inherent to underwater robotics technology.

Troubleshooting and Maintenance of Electrical/Electronics Hardware; Troubleshooting and Maintenance of Hydraulic/Mechanical Hardware; Preventative Maintenance Regimes.

Prerequisites - Term 1 ROV Program which include: ELTK 3104 (Electrotechnology); ELTR 3117 (Fabrication); ELTR 3118 (Industrial Electronic and Controls); ELTR 3119 (Data Communications); ENGR 3100 (Blueprint Reading); FLDS 3106 (Introduction to Fluid Statics & Dynamics); FLDS 3107 (Hydraulic

COURSE DESCRIPTIONS

Controls); WKPR 3106 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (13 Labs) = 26 hours total

ROVO 3103 (Underwater Acoustic Applications)

This course is designed to introduce students to the principles and applications of acoustic remote sensing with specific emphasis on its utilization in ROV operations.

Introduction; Principles; Applications

Prerequisites - Term 1 ROV Program which include: ELTK 3104 (Electrotechnology); ELTR 3117 (Fabrication); ELTR 3118 (Industrial Electronic and Controls); ELTR 3119 (Data Communications); ENGR 3100 (Blueprint Reading); FLDS 3100 (Introduction to Fluid Statics & Dynamics); FLDS 3107 (Hydraulic Controls); WKPR 3106 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours biweekly = 12 hours total

ROVO 3104 (Launch and Recovery Systems or LARS)

This course is designed to introduce students to the basics types, operation and maintenance of Launch and Recovery systems.

Types of LARS: Dynacon A-frame, Pedestal Cranes, Miscellaneous System Elements: LARS Components, Lift Winches, Parking Platforms, A-frames and Control Stations.

Prerequisites - Term 1 ROV Program which include: ELTK 3104 (Electrotechnology); ELTR 3117 (Fabrication); ELTR 3118 (Industrial Electronic and Controls); ELTR 3119 (Data Communications); ENGR 3100 (Blueprint Reading); FLDS 3106 (Introduction to Fluid Statics & Dynamics); FLDS 3107 (Hydraulic Controls); WKPR 3106 (Workshop Practice)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/2week (6 Labs) = 12 hours total

ROVO 3105 (ROV Ship Interaction)

This course gives the student an introduction to dynamic positioning (DP) operations on vessels equipped with ROVs. It enables the student to understand the operation of a DP system and to assess the operation of a DP system during ROV operations.

Dynamic Positioning; Dynamic Positioning Principles; Sensors; Dynamic Positioning Applications; Coordinate Systems; Position References; Thrusters and Manoeuvring Systems; Dynamic Positioning Modes; Power Management Systems; Dynamic Positioning Operations; Regulations; Dynamic Positioning Control Console

Prerequisites - Term 2 ROV Program which include: ELTK 3105 (High Voltage Safety); ROVO 3100 (Introduction to ROV Systems); ROVO 3103 (Underwater Acoustic Applications); ROVO 3104 (Launch & Recovery Systems or LARS); ROVO 3101 (ROV Operations); ROVO 3102 (ROV Maintenance)

Duration - 4 days (28 hours)

ROVO 3106 (Pilot Training)

This course is designed to instruct the students in the methods

employed to pilot an eyeball class ROV under real world situations involving static and dynamic water environments.

Basic Piloting Protocols; Task Specific Flying Exercises; Flying in Heavy Currents Scenarios

Prerequisites - ROV Program Term 2: ELTK 3105 (High Voltage Safety); ROVO 3100 (Introduction to ROV Systems); ROVO 3101 (ROV Operations); ROVO 3102 (ROV Maintenance); ROVO 3103 (Underwater Acoustics Applications); ROVO 3104 (Launch & Recovery Systems or LARS)

Duration - 42 hours

ROVO 3107 (ROV Simulator Training)

This course is designed to instruct the students in the major facets of ROV piloting.

Basic Flying Protocols in Simulated Environments; Simulated Flying Exercises

Prerequisites - ROV Program Term 2 which include: ELTK 3105 (High Voltage Safety); ROVO 3100 (Introduction to ROV Systems); ROVO 3101 (ROV Operations); ROVO 3102 (ROV Maintenance); ROVO 3103 (Underwater Acoustics Applications); ROVO 3104 (Launch & Recovery Systems or LARS)

Duration - 70 hours

ROVO 3200 (AUV Designs and Operations)

This course is designed to familiarise the students with the overall systems and subsystems of AUV technology including design, construction, propulsion, control and sensory hardware/software, as well as typical AUV operational tasks.

AUV Shells, Base Structures, and Body Types; Power Supplies, Thrusters, Control Electronics Environmental Sensors, Software Basics; Field Applications and Operations

Prerequisites - (Industrial Electronic and Controls)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours total

Laboratories - 2 hours/week (13 Labs) = 26 hours total

SFTY 0001 (Basic Boat Skills)

This course is designed to instill workers/participants with an increased awareness and knowledge of the small boat safety and skills related to aquaculture activities. It will include theory and practical skills components for inexperienced workers to orient them to basic navigation, proper handling, docking, loading and other fundamental boat skills.

Types of Hulls; Environmental Forces Acting on a Boat; Propulsion and Steering; Boat Handling Characteristics; Boat Handling Procedures; Boat Handling in Heavy Weather; Navigation; Practical Boat Handling

Duration - 5 days

SFTY 0200 (Workplace Safety Skills)

This course provides participants with the knowledge and practical skills necessary to perform their duties safely within their workplace.

Occupational Health and Safety Act – Laws and Regulations, Workplace Health and Safety Responsibilities, Safety Committee, Employee Rights, Workplace Diversity, Duties of Safety Officers, Civil Law Implications, and Accident and Incident Reporting

Duration - 13 weeks
Lectures - 2 hours/week
Laboratory - 1 hour/week

SFTY 1100 (Marine Emergency Duties) SFTY 1108 (A1 - Basic Safety)

This course is designed to provide seafarers with the minimum knowledge of emergency response required to safely work aboard a vessel according to the Transport Canada course syllabus in Marine Publication TP 4957.

Introduction and Safety; Hazards and Emergencies; Emergency Response; Firefighting; Lifesaving Appliances and Abandonment; Survival; Rescue

Prerequisites - Marine Institute approved medical clearance
Duration - 20 hours - 3 days
Theory - 12 hours
Practical - 8 hours

SFTY 1100 (Marine Emergency Duties) SFTY 1110 (B1 - Survival Craft)

This course is intended to train individuals in personal marine survival techniques, and in the use of survival craft to an extent appropriate to the functions of crew members of ships. It complies with or exceeds the requirements of Transport Canada's (Marine Safety Directorate), Marine Emergency Duties B1.

Survival Craft and Launching Systems; Small Team Leadership Techniques; Abandoning and Practical Boatwork; Survival; Distress Signals; and Rescue

Duration - 35 hours
Lectures - 15 hours
Practical - 20 hours

SFTY 1100 (Marine Emergency Duties) SFTY 1111 (B2 - Marine Firefighting)

This is a basic firefighting course which introduces the student to both the theoretical and practical aspects of Marine firefighting.

Fire Science; Cause and Prevention; Equipment; Construction and Arrangement; Firefighting Procedures; Fixed Fire Detection and Extinguishing Systems

Duration - 5 days
Theory - 15 hours
Practical - 14 hours

SFTY 1101 (Standard First Aid)

An approved training provider will deliver this two-day course.

SFTY 1102 (Marine Basic First Aid STCW A-VI/1-3)

This is a basic first aid training course for seafarers that meets IMO: STCW Regulation VII/ 4 and STCW Code Section A-VI/ 4, and requirements under TP 13008 Training Standards for Marine First Aid and Marine Medical Care. This course is designed for seafarers who would apply immediate basic first aid in the event of an accident or illness onboard a vessel.

General Principles, Body Structure and Functions, Positioning of Casualty, the Unconscious Casualty, Resuscitation, Control Bleeding, Management of Shock, Burns, Scalds, and Accidents caused by Electricity, Rescue and Transport of Casualty, Fractures, Dislocations, and Muscular injuries, Medical Emergencies, Head and Spine Injuries, Wounds, Heat and Cold Related Emergencies, Poison, Bites and Stings, Other Topics.

Prerequisites - None
Duration - 17 hours
Theory - 10 hours
Practical - 7 hours

SFTY 1103 (Transportation of Dangerous Goods Initial (Road))

This course is designed to provide training for all persons involved in the Handling, Offering for Transport, and/or Transporting of Dangerous Goods.

Introduction to TDG, Classification, Shipping Document, Safety Marks, Containers, Special Situations, Emergency Actions.

Duration - 6 hours

SFTY 1104 (WHMIS)

This is an introductory course designed to inform students about the Workplace Hazardous Materials Information System (WHMIS)

Workplace Hazardous Materials Information System; Regulations; Chemical Hazards; Labelling; Material Safety Data Sheets; Confidential Information

Duration - 4 hours

SFTY 1105 (MED C - Officer Certification)

This Marine Emergency Duties course is designed for junior officers and key personnel. It gives the student the knowledge and skills necessary to inspect, maintain, and effectively utilize their equipment to respond to any shipboard emergency. The course is approved by Transport Canada and meets the international convention on standards of training certification

and watchkeeping for seafarers (STCW 1978). Deck officers and engineering officers requiring a Continued Proficiency Endorsement are required to complete this course.

Fixed Fire Detection and Extinguishing Systems; Inspection and Maintenance of Emergency Equipment; Response of Bridge, Deck, and Engine Room Watch to Emergencies;

COURSE DESCRIPTIONS

Emergency Response Team Leadership; Firefighting On-scene Leader Plan of Attack; Incident Reporting; Crowd Management; Search and Rescue; Internal Communications; Conduct of Training Sessions

Prerequisite - Successful completion of Marine Emergency Duties Training Course SFTY 1110 (B1-Survival Craft), and Marine Emergency Duties Training SFTY 1111 (B2 - Marine Firefighting) within the past five years (Recommendation)

Duration - 21 hours

Theory - 16 hours

Practical - 5 hours

SFTY 1106 (Marine Advanced First Aid (STCW A-VI/4-1

This is an advanced first aid training course for seafarers that meets IMO: STCW Regulation VI/4 and STCW Code Section A-VI/4, and requirements under TP 13008 Training Standards for Marine First Aid and Marine Medical Care. This course is designed for seafarers who would apply immediate advanced first aid in the event of an accident or illness onboard a vessel.

Immediate Action, First-Aid Kit, Body Structure and Functions, Toxicological Hazards onboard Ship, Examination of Patient, Spinal Injuries, Burns, Scalds and Effects of Heat and Cold, Fractures, Dislocations and Muscular Injuries, Medical Care of Rescued Persons, Including Distress, Hypothermia and Cold exposure, Radio medical Advice, Pharmacology, Sterilization, Cardiac Arrest, Drowning and Asphyxia, Psychological and Psychiatric Problems, Chest, Abdominal, and Pelvic Injuries.

Prerequisite - None

Duration - 36 hours

Theory - 19 hours

Practical - 16 hours

SFTY 1114 (Basic Safety - STCW'95 VI/I)

This is a basic safety training course for seafarers which meets IMO: STCW Regulation VI/ 1 and STCW Code Tables A-VI/ 1-1, 1-2, and 1-4, and requirements under TP 4957 in Marine Personnel Regulations in Basic Safety and in Marine Fire Fighting.

Introduction and Course Safety; Hazards, Emergencies, Emergency Preparedness and Response, Pollution Prevention; Fire Fighting Theory; Fire Prevention and Control Aboard Ships; Shipboard Fire Fighting Organization and Training; Practical Fire Fighting; Use and Care of Fire Fighting Equipment; Lifesaving Equipment and Abandoning; Survival; Communications; Rescue; Safe Working Practices; Effective Human Relations on Board Ships

Prerequisite - Marine Institute approved medical clearance; Marine Institute approved fit testing

Co-requisite - Marine Basic First Aid or Marine Advanced First Aid

Duration - 43 hours

Lecture - 21 hours

Practical - 22 hours

SFTY 1115 (Basic Survival Training)

This is a basic course designed to provide personnel with an understanding of the hazards associated with working in an offshore environment, the knowledge and skills necessary to react effectively to offshore emergencies and to care for themselves and others in a survival situation.

Hazards, Emergencies and Safety; Emergency Preparedness and Response; Firefighting; Personnel Buoyancy Apparatus; Personal Transfer Devices; Evacuation; Survival Craft and Launching Systems; Survival; Signaling Devices; Search and Rescue; Helicopter Safety and Emergency Procedures

Prerequisite - Medical Clearance in accordance with MI policy.

Duration - 40.0 hours (5 days)

Theory - 17.5 hours

Practical - 22.5 hours

SFTY 1116 (Tanker Familiarization)

This is an introductory level course designed for non-certified ratings so that they may understand the hazards associated with working in a tanker environment. It also provides them with the knowledge required to work safely in this environment. This course meets and/or exceeds the standards set down in Transport Canada TP8129E and STCW 95.

Tankers; Cargoes; Toxicity; Hazards; Hazard Control; Personal Safety and Protective Equipment; and Pollution Prevention

Duration - 28.0 hours (4 days)

Theory - 24.0 hours

Practical - 4.0 hours

SFTY 1117 (Survival Craft - STCW'95 V1/2)

This course is designed to meet IMO/STCW95 VI/2 Training in Survival Craft and Rescue Boats, other than Fast Rescue Boats, and Canadian requirements under the Marine Personnel Regulations for training of marine personnel. Participants will advance their knowledge of marine survival craft and associated equipment as well as prepare to manage crew and passengers during abandoning of a vessel, surviving at sea, and being rescued.

Introduction and Safety; Emergency Situations; Principles of Survival; Use of Personal Survival Equipment; Helicopter Rescue; Survival Craft and Rescue Boats; Launching Arrangements; Lifeboat Engine and Accessories; Evacuation; Signalling Equipment and Pyrotechnics; Action Aboard a Survival Craft; Launching and Recovering Lifeboats; Life Raft Launching; Launching and Handling Survival Craft in Rough Weather; Radio Equipment

Prerequisites - Marine Institute approved medical clearance; SFTY 1108 (A1 – Basic Safety); SFTY 1109 (MED A2 – Small Vessel Safety), or SFTY 1114 (Basic Safety-STCW'95 VI/I)

Duration - 28 Hours

Lectures - 12 hours

Practical Exercises - 16 hours

SFTY 1118 (Advanced Firefighting & Officer Certification - STCW'95 VI/3)

This is an advanced Marine Fire Fighting course designed to meet STCW Regulation VI/3 Advanced Fire Fighting and requirements under the Canadian Marine Certification Regulations up to the Chief Officer/Second Engineer level.

Introduction, Safety and Principles; Training of Seafarers in Fire Fighting; Fire Fighting Process Hazards; Ventilation Control Including Smoke Extraction; Monitoring and Control of Stability During Fire Fighting; Response of Bridge, Deck and Engine Room Watch Officers to Emergencies; Emergency Response Team Leadership; Plan of Attack for On-scene Fire Fighting Leaders; Co-ordination of Shipboard Fire Fighting; Co-ordination with Shore-Based Fire Fighters; Management and Control of Injured Persons; Fixed Fire Detection and Extinguishing Installations; Inspection and Maintenance of Emergency Equipment; Incident Investigation and Reporting; Crowd Management; Search and Rescue; Communications

Prerequisite - Medical Clearance according to Marine Institute policy; Completion of SFTY 1114 (Basic Safety - STCW'95 VI/I); Completion of SFTY 1117 (Survival Craft - STCW'95 VI/2) or SFTY 1108; SFTY 1110 & SFTY 1111; Marine Institute Approved Fit Testing

Duration - 36.5 hours

Lecture - 18.5 hours

Practical Exercises - 18.0 hours

SFTY 1119 (Small Boat Navigation for Seamanship)

This course is a combination of two approved short courses - MED A3 (Small Vessel Safety) and Small Vessel Operator - Commercial/Fishing Vessels Training and Certification

SFTY 1120 (Confined Space Awareness)

This is an introductory course designed to provide students with an awareness of confined space issues and to familiarize them with self-contained breathing apparatus.

Confined Spaces, Detection Equipment, Purging and Ventilating, Entry Procedures, Confined Space Rescue, and Psychological Aspects of a Confined Space, Self-Contained Breathing Apparatus

Duration - 8 hours

Theory - 6 hours

Practical - 2 hours

SFTY 1121 (Equipment and Site Safety)

This is an introductory course designed to provide students with an awareness of site safety and to familiarize them with basic site evaluation skills and the equipment used on remediation sites.

Occupational Health and Safety Act; The Work Site

Duration - 7 hours

SFTY 1123 (Oil and Chemical Tanker Familiarization STCW'95 A-V/1)

This course applies to officers and ratings who will be assigned specific duties and responsibilities related to cargo and cargo equipment on oil or chemical tankers, taking into account section A-V/1 of the STCW Code to enable the participants to assume the duties and responsibilities relating to the loading, discharging or transfer of cargo and the operation of cargo equipment.

Oil Tanker; Chemical Tanker; Rules and Regulations; Basic Science Concepts; Oil Tanker Cargo Handling Systems; Chemical Tanker Cargo Handling Systems; Oil Tanker Operations; Chemical Tanker Operations; Health, Safety and Emergency Procedures; Pollution Prevention.

Prerequisite - SFTY 1114 (Basic Safety STCW '95 VI/I) or equivalent; Marine Institute approved Medical Clearance

Duration - 60 Hours

Theory - 55 hours

Practical - 5 hours

SFTY 1124 (Confined Space Entry Awareness) - *To be delivered after SFTY 1123

This is an introductory course designed to provide students with an awareness of marine confined space issues and to familiarize them with a selection of specialized equipment required for safe entry into confined spaces.

Confined Spaces, Atmospheric Assessment, Purging and Ventilating, Entry Procedures, Respiratory Protection, Confined Space Entry Safety Equipment

Duration - 7 hours

Theory - 4 hours

Practical - 3 hours

SFTY 1125 (Small Vessel Operator Proficiency)

This course is designed to provide candidates with the skills and knowledge to act as the operator of commercial vessels up to 5 gross tonnage, other than tugs, and fishing vessels, and for fishing vessels up to 15 gross tonnage or 12 meters overall length engaged on a near coastal, class 2 or a sheltered waters voyage.

This course has been developed in accordance with the Transport Canada Marine Safety TP 14692 E.

Introduction; Terminology; Vessel Hull Types and Configurations; Seamanship; Collision Avoidance Regulations; Stability; Safety on the Job; Marine Weather; Navigation, Positioning Equipment and Installations; Power Boat Operations; Search and Rescue (SAR) Resources; Protection of the Marine Environment; Departure Preparation; Quick Reference Checklists

Duration - 28 hours

SFTY 1126M (Standard First Aid with Level C-CPR and AED)

An approved training provider will deliver this three-day course.

COURSE DESCRIPTIONS

SFTY 1127 (Passenger Safety Management)

This course is designed to provide students with standards for familiarization and basic safety training as well as competencies to cope with such hazards and emergencies to the extent appropriate to their functions onboard passenger-carrying vessels. It will also provide seafarers with an understanding of measures to be taken in order to ensure safe operation of passenger-carrying vessels.

Introduction; Crowd Management Training; Safety Training for Personnel Providing Direct Service to Passengers in Passenger Space; Passenger Safety Training; Crisis Management and Human Behaviour Training

Duration - 12.5 hours

Lectures - 9.5 hours

Laboratory - 3 hours

SFTY 1128 (Basic Survival Training)

This is a basic course designed to provide personnel with an understanding of the hazards associated with working in an offshore environment, the knowledge and skills necessary to react effectively to offshore emergencies and to care for themselves and assist others in a survival situation.

Working Offshore; Helicopter Safety & Emergency Procedures; Fire Safety; Abandonment & Survival; Survival Craft; Search & Rescue

Prerequisite - Marine Institute approved medical clearance;

Duration - 40 hours (5 days)

Theory - 17.5 hours

Practical - 22.5 hours

SFTY 1129 (Security Awareness Training for Seafarers with Designated Security Duties)

This course provides knowledge to those who may be designated to perform the duties and responsibilities of seafarers with designated security responsibilities, as defined in Table A-VI/6-2 of the STCW Code, and Section 213 of the Canadian MTSR, and in particular the duties and responsibilities with respect to assisting the Vessel Security Officer in enhancing the security of a vessel.

Introduction; Maritime Security Policy; Security Responsibilities; Ship Security Assessment; Security Equipment; Threat Identification, Recognition and Response; Vessel Security Actions; Emergency Preparedness, Drills, and Exercises; Security Administration

Lectures - 9.5 hours

Practical - 2.0 hours

Exam - 1.0 hours

Total - 12.5 hours

SFTY 1130 (Introduction to Transportation of Dangerous Goods (TDG))

This is an introductory course designed to provide students with an awareness and understanding of the Transportation of Dangerous Goods Act and Regulations and the classifications, shipping requirements, safety requirements, and emergency measures and actions needed in the transportation of dangerous goods in Canada.

Introduction to TDG; Transportation of Dangerous Goods Act; TDG Regulations; Manual Layout; Classification; Documentation; Dangerous Goods Safety Marks; Means of Containment; Training Requirements; Emergency Actions; Transportation Modes / Inspectors

Duration - 2 days (14 hours Lecture)

SFTY 2100 (Small Craft Safety & Boat Handling)

This is an introductory course in the principles and practices of small boat safety and handling.

Boat Safety; Legislation; Safety Equipment; Stability; Deckwork; Towing; Emergency Procedures

Duration - 35 hours

SFTY 2101 (H2S ALIVE)

Information will be distributed by the instructor.

H2S Alive Petroleum Industry Training Service Certificate.

SFTY 2102 (MED A3 - Marine Emergency Duties for Small Vessels)

This is a marine emergency duties course designed for crew members of non-pleasure vessels of not more than 150GT which operate not more than 20 miles from shore.

Introduction and Course Safety; Hazards and Emergencies; Emergency Prevention, Preparedness, and Response; Firefighting; Lifesaving Appliances and Abandoning; Survival; Signalling; Rescue

Duration - 14 hours

Lecture - 10 hours

Practical - 4 hours

SFTY 2200 (Small Boat Navigation for Cruise Planning)

This course is designed to enable participants to understand and apply the fundamental principles of coastal navigation for small boats.

The Coordinate System; Basic Tools of the Trade; Compass Work; Chartwork Skills; Global Positioning System; Publications; Cruise Planning

Prerequisite - MATH 1100

Duration - 30 hours

SFTY 2201 (Boating - Practical Skills)

This course is designed to enable participants to develop and apply fundamental practical skills for use with small boats.

Basic Tools of the Trade; Compass Work; Chartwork Skills; Global Positioning System; Cruise Planning; Knots and Basic Splicing

Duration - 26 hours (2 hours lab per week)

SFTY 2300 (Small Boat Navigation for Marine Sampling)

This course is designed to enable participants to apply the fundamental principles of basic coastal navigation to the operation of a small boat in coastal marine waters while sampling.

Cruise Planning; Electronic Instrument Set-up; Pre-departure Checks; Passage Monitoring; Station Keeping

Prerequisite - SFTY 2201 (Boating Practical Skills)

Duration - 35 hours

SFTY 2301 (Fall Protection)

This course will enable the participant to identify and safely use the proper equipment for fall protection in the workplace. This course will meet the Fall Protection Certification Training Standard for Workplace Health and Safety Compensation Commission (WHSCC).

Fall Protection Regulations and Standards, Fall Protection and Fall Arrest Systems, Components of a Fall Arrest System, Inspection of a Fall Arrest System, Assembly and Donning of a Fall Arrest System, Fall Protection Plan, Fall Protection System and Forces and Calculations, Accident/Incident investigation, Rescue Considerations; Case Studies

Duration - 16 hours

Theory - 8 hours

Practical - 8 hours

SMALL VESSEL OPERATOR - Commercial/Fishing Vessels Training and Certification

This course is designed to provide candidates with the skills and knowledge to act as operator of a small commercial or fishing vessel in conformation with regulations of Transport Canada Marine Safety.

Introduction; Terminology; Vessel Hull Types and Configurations; Seamanship; Collision Avoidance Regulations; Stability; Safety on the Job; Marine Weather; Navigation, Positioning Equipment and Installations; Power Boat Operations; Search and Rescue Resources; Protection of the Marine Environment; Departure Preparation; Quick Reference Checklists

STAT 2108 (Applied Statistics)

This course is designed to provide the student with a working knowledge of descriptive statistics and the statistical treatment and interpretation of data.

Sampling; Methods for Describing Sets of Data; Probability and Binomial Distribution; Normal Distribution; Inferences Based on a Single Sample: Estimation; Statistical Inference: Tests of Hypothesis; Analysis of Variance; Simple Linear Regression

Prerequisite - MATH 1100 (Pre-Calculus)

Lectures - 39 hours

Laboratories - 26 hours

STAT 4102 (Statistics for Coastal Zone Management)

This course will provide the participants with the necessary statistical tools for decision making in Coastal Zone Management.

Descriptive Statistics; Data Collection and Surveys; Statistical Inference

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 2 hours/week

STAT 4103 (Statistics - Water Quality)

This is a course designed to familiarize students with modern statistical methods and guidelines for the analysis of water quality data.

Introduction; Numerical Methods for Describing Sets of Data; Exploratory and Graphical Data Analysis; Probability and Probability Distributions; Inferences Based on a Single Sample: Point Estimation; Statistical Inference: Tests of Hypothesis; Analysis of Variance: One-Factor; Analysis of Variance: Two-Factors; Regression and Correlation

Lectures - 39 hours

Laboratories - 26 hours

STAT 4105 (Statistics - Aquaculture)

This course is designed to familiarize students with modern statistical methods and guidelines for the analysis of aquaculture/ecological data.

Introduction; Numerical Methods for Describing Sets of Data; Exploratory/Graphical Data Analysis; Probability and Probability Distributions; Inferences Based on a Single Sample: Point Estimation; Statistical Inference: Tests of Hypotheses; Analysis of Variance: One-Factor; Analysis of Variance: Two-Factors; Regression and Correlation

Prerequisite - One university or college level introductory statistic course, or equivalent.

Lectures - 39 hours (3 hours per week)

Laboratories - 26 hours (2 hours per week)

COURSE DESCRIPTIONS

STAT 4106 (Applied Statistics for Food Safety)

This course is designed to familiarize students with modern statistical methods and guidelines for the analysis of food safety/production data and to provide an introduction to statistical process control methods.

Introduction; Numerical Methods for Describing Sets of Data; Normal Distributions; Inferences Based on a Single Sample; Point Estimation; Statistical Inference: Tests of Hypotheses; Analysis of Variance; Regression and Correlation; Discrete Probability Distributions; Acceptance Sampling; Statistical Process Control

Prerequisite - One university or college level introductory statistics course, or equivalent

Lectures - 39 hours

Laboratories - 26 hours

STWK 0107 (Welding Theory I)

This introductory course is designed to familiarize the student with the theoretical aspects of welding.

Introduction to Trade; Safety; Oxy-Fuel Cutting, Fusion, Brazing and Braze Welding (Oxy-Fuel); SMAW (Shielded Metal Arc Welding) I; Build up of Metal Parts; SMAW II – Fillet Weld Flat and Horizontal (Part 1); Metallurgy, Expansion and Contraction Control; Jigs and Fixture Fabrication.

Co-requisites - STWK 0108 (Fabrication Theory I); WKPR 0107 (Welding and Fitting Shop)

Duration - 13 weeks

Lectures - 2 hours/week

STWK 0108 (Fabrication Theory I)

This introductory course is designed to familiarize the student with the theoretical aspects of steel fabrication.

Offshore Fabrication Work Environment; Safety Requirements; Structural Steel; Hand Measuring and Layout Tools; Procedures Used To Fabricate Various Structural Shapes; Hand and Power Cutting Tools; Drilling and Threading Tools; Grinding and Finishing; Bending and Rolling; Stationary Powered Shearing; Iron Worker Operation

Co-requisites - STWK 0107 (Welding Theory I); WKPR 0107 (Welding and Fitting Shop I)

Duration - 13 weeks

Lectures - 2 hours/week

STWK 0207 (Welding Theory II)

This intermediate level course is designed to enhance the student's theoretical knowledge in offshore welding.

SMAW (Shielded Metal Arc Welding) Groove Weld All Positions; Procedures To Test Welds; Weld Faults; Fillet and Groove Welds on Medium and High Carbon Steel; Plasma Arc Cutting and Gouging.

Prerequisite - STWK 0107 (Welding Theory I); STWK 0108 (Fabrication Theory I); WKPR 0107 (Welding and Fitting Shop I)

Duration - 13 weeks

Lectures - 2/0

STWK 0208 (Fabrication Theory II)

This intermediate level course is designed to enhance the student's theoretical knowledge in offshore steel fabrication.

Code and Standards; Heat Treatment; Quality Control and Quality Assurance.

Prerequisite - STWK 0107 (Welding Theory I); STWK 0108 (Fabrication Theory I); WKPR 0107 (Welding and Fitting Shop I)

Duration - 13 weeks

Lectures - 2/0

STWK 0300 (Introduction to Apprenticeship)

This course is designed to give participants the knowledge base and skills necessary to understand and successfully navigate the Apprentice/Red Seal Program.

Apprenticeship Defined; How Apprenticeship is Governed and Administered; Roles and Responsibilities of Those People Involved in the Apprenticeship Process; Steps in the Apprenticeship Program; Training and Education Requirements; Plans of Training; Red Seal Program; Apprenticeship Progression Schedule; Apprenticeship Evaluation Process; Financial Incentives Available to Apprentices; Continuing Apprentice Training Outside Province of NL; Definitions.

Prerequisite- Successful completion of all courses in Term 1 and Term 2

Duration - 5 weeks

Lectures - 3/0

TKPR 310A/310B (Technological Project - Marine Engineering Technology)

The Technological Project is a linked course; TKPR 310B must be completed in the following academic term after TKPR 310A. The course is designed for advanced Marine Engineering Technology students to demonstrate the application of knowledge and skills developed throughout the program.

Design Morphology; Project Selection; Problem Identification; Project Research and Planning; Project Proposal; Project Performance; Project Analysis; Project Reporting and Presentation

Prerequisite - TKPR 310A:

Successful completion of CMSK 1201 (Communication at Work); MREK 3106 (Marine Engineering Knowledge); WKPR 2113 (Welding Shop), WKPR 2116 (Fitting Shop), WKPR 2217 (Machine Shop), WKTm 1103 (Work Term 1), and WKPR 3101 (Machinery Maintenance Shop)

TKPR 310B - Successful completion of TKPR 310A

Duration - TKPR 310A - 13 weeks

Lectures - 1 hour per week

Laboratories - 2 hours per week

Duration - TKPR 310B - 13 weeks

Lectures - 1 hour per week

Laboratories - 2 hours per week

TKPR 3100A/B (Technological Project)

The Technological Project is a linked course; TKPR 3100B must be completed in the technical Session immediately following TKPR 3100A, and TKPR 3100C must be completed in the next academic term after TKPR 3100B. The course is designed for advanced Marine Engineering Technology students to demonstrate the application of knowledge and skills developed throughout the program.

Design Morphology; Project Selection; Problem Identification; Project Research and Planning; Project Proposal; Project Performance; Project Analysis; Project Reporting and Presentation

Prerequisites - TKPR 3100A: Successful completion of CMSK 1201 (Communication at Work); MREK 2107 (Marine Engineering Knowledge); MREK 2207 (Marine Engineering Knowledge); WKPR 1106 (Fitting Shop); WKPR 1107 (Welding Shop); WKPR 1108 (Machine Shop); WKPR 2104 (Fitting Shop); WKPR 2107 (Welding Shop); WKPR 2108 (Machine Shop) and WKPR 3100 (Machinery Maintenance Shop)

TKPR 3100B - Successful completion of TKPR 3100A

TKPR 3100C - Successful completion of TKPR 3100B

Duration -

TKPR 3100A - 13 Weeks

Lecture/Lab - 1/2

TKPR 3100B - 5 weeks

Lecture/Lab - 1/2

TKPR 3100C - 13 Weeks

Lecture/Lab - 1/2

TKPR 3108 (Advanced Technical Report Writing)

The technical report completed in this course enables students to work in groups and carry out an in-depth study of a problem, design, technological application or current issue related to the maritime sector. They will fully document and present their findings in a technical report and presentation.

Technical Reporting Fundamentals; Research Topic Selection; Teamwork and Group (Committee) Dynamics; Report Development; Report Presentation Development

Prerequisites - CMSK 1201 (Technical Communications II); WKTm 2102 (Sea Phase II)

Duration - 13 weeks

Lectures - 4 hours/week = 52 hours total

TKPR 312A/312B (Technological Thesis - Marine Environmental)

The technological thesis enables the student completing a Diploma Program to demonstrate the application of knowledge and skills developed throughout the program. Students taking this course will work independently on a project under the supervision of a faculty advisory committee. They will carry out an in-depth study of a problem, design or technological application, and fully document and present their findings.

This is a linked course – TKPR 312B must be completed in the academic term immediately following completion of TKPR 312A.

Problem Solving and the Engineering Design Process; Managing and Planning Environmental Projects; Project Identification; Project Analysis; Project Research and Documentation; Progress Report (Oral and Written); Draft of Project Report; Final Report Presentation; and Oral Report Presentation

Prerequisites - TKPR 312A - Successful Completion of all Term 3 and Term 4 Courses EXCEPT MATH 1200.

TKPR 312B - TKPR 312A

Duration - TKPR 312A - 13 weeks

Lectures - 5 hours/week

Duration - TKPR 312B - 13 weeks

Lectures - 5 hours/week

TKPR 3106A/B (Technical Project - Food Technology)

This course provides students with the opportunity to design, implement and report on a technical project with potential benefits to the Canadian food processing industry.

This is a linked course - TKPR 3106B must be completed in the academic term immediately following completion of TKPR 3106A

Identification of Potential Projects; Project Selection; Design and Analysis; Implementation; Reporting

Prerequisites - TKPR 3106A - BIOL 2202 (Food Microbiology); CMSK 2102 (Interpersonal Communications); STAT 2108 (Applied Statistics); FDTE 2107 (Food Processing I); QLAS 2104 (Food Evaluation)

Co-requisites - CHEM 3100 (Chemistry); FDTE 3100 (Food Engineering - Unit Operations); FDTE 3107 (Food Processing II)

Prerequisites - TKPR 3106B - TKPR 3106A

Duration -

TKPR 3106A - 39 hours

TKPR 3106B - 78 hours

TKPR 317A/317B (Technological Thesis - Nautical Science Technology)

The technological project is a linked course; TKPR 317B must be completed in the academic term immediately following TKPR 317A. The project completed in this linked course enables the student to utilize knowledge and skills developed throughout the diploma program.

Students taking this course will work as a group on a project, under the supervision of a faculty advisory committee. They will carry out an in-depth study of a problem, design, technological application or current issue related to the marine industry, and fully document and present their findings.

Project Identification; Teamwork and Group Dynamics; Project Analysis; Project Research and Documentation; Project Presentation

COURSE DESCRIPTIONS

Prerequisite - TKPR 317A - Successful completion of Sea Phase 1, TS1 and TS2, and CMSK 1201
TKPR 317B - Successful completion of TKPR 317A and WKTM 2102

Duration - TKPR 3107A - 13 weeks

Lecture - 2 hours per week

Laboratories - 2 hours per week

Duration - TKPR 317B - 13 weeks

Lecture - 1 hour per week

Laboratories - 3 hours per week

TKPR 3500 (Electro-mechanical Fabrication Project)

This course is designed for advanced level students to demonstrate the application of knowledge and skills developed throughout the program.

Design Morphology; Project Selection; Problem Identification; Project Research and Planning; Project Proposal; Preparation for Equipment and/or Material; Project Performance; Project Analysis; Project Reporting and Presentation.

Prerequisites - Successful completion of CMSK 1104; ELTR 1104; WKPR 2301; CNTL 3105; CNTL 3201; ELTR 3210; and ELTR 2107

Duration - 13 weeks Lecture/Lab: 1/2

Lectures - 1 hour/week = 13 hours total

Laboratories - 4 hour/week = 52 hours total

TKPR 411A/411B (Technical Project - Sustainable Aquaculture)

This course provides students the opportunity to design, implement, and report on a research project with potential benefits to the aquaculture industry. This is a linked course – TKPR 411B must be completed in the academic term immediately following completion of TKPR 411A.

Identification of Potential Projects; Project Selection; Design and Analysis; Implementation; Reporting

Prerequisites -

TKPR 411A - None

TKPR 411B - TKPR 411A

Duration - TKPR 411A - 13 weeks

Lectures - 1 hour per week = 13 hours total

Duration - TKPR 411B - 13 weeks

Lectures - 11 hours per week = 143 hours total

TKPR 413A/413B (Technical Project - Food Safety)

This course provides students the opportunity to design, implement, and report on a technical project with potential benefits to the Canadian food processing industry. This is a linked course – TKPR 413B must be completed in the academic term immediately following completion of TKPR 413A.

Identification of Potential Projects; Project Selection; Design and Analysis; Implementation; Reporting

Prerequisites -

TKPR 413A - None

TKPR 413B - TKPR 413A

Duration - TKPR 413A - 13 weeks

Lectures - 2 hours per week = 26 hours total

Duration - TKPR 413B - 13 weeks

Other Requirements - 13 hours per week = 169 hours total.

TKPR 415A/415B/415C (Technical Project - Water Quality)

This course provides students the opportunity to design, implement, and report on a technical project related to various aspects associated with water and water use.

This is a linked course – TKPR 415A/B/C must be completed sequentially in the same academic year.

Identification of Potential Projects; Project Selection; Design and Analysis; Implementation; Reporting

Prerequisites -

TKPR 415A - None

TKPR 415B - TKPR 415A

TKPR 415C - TKPR 415B

Duration - TKPR 415A - 6 weeks

Lectures - 2 hours per week = 12 hours total

Duration - TKPR 415B - 13 weeks

Other Requirements - 3 hours per week = 39 hours total

Duration - TKPR 415C - 5 weeks

Other Requirements - 15 hours per week = 75 hours total

TRMO 2100 (Thermodynamics)

This is an introductory course in thermodynamics. The course will provide the student with the basics of thermodynamics and its application to various processes.

Introduction to Thermodynamics; First Law and Applications; Second Law and Applications; Gas Laws; Processes; Gas Power Cycles.

Prerequisite - PHYS 1101 (Physics) or PHYS 1100 (Physics); MATH 1100 (Pre-Calculus) or MATH 1102 (Pre-Calculus)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

TRMO 2105 (Thermodynamics)

This is an introductory course in thermodynamics. The course will provide the student with the basics of thermodynamics and its application to various processes.

Introduction to Thermodynamics; First Law and Applications; Second Law and Applications; Gas Laws; Processes; Gas Power Cycles.

Prerequisite - PHYS 1103 (Physics); MATH 1100 (Pre-Calculus)

Duration - 13 weeks instruction, exclusive of final examination

Lectures - 3 hours/week = 39 hours total

Laboratories - 1 hour/week = 13 hours total

TRMO 2200 (Thermodynamics)

This course follows from TRMO 2100 and applies the knowledge obtained in that course to specific mechanical systems. These applications are ones which the mechanical engineering technologist is likely to use in his or her future work.

Steam; Internal Combustion Engines; Combustion.

Prerequisite - TRMO 2100 (Thermodynamics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

TRMO 2204 (Thermodynamics)

This course follows from TRMO 2100 (Thermodynamics) and applies the knowledge obtained in that course to specific mechanical systems. These applications are ones which the mechanical engineering technologist is likely to use in his or her future work.

Steam; Internal Combustion Engines; Combustion.

Prerequisite - TRMO 2105 (Thermodynamics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 1 hour/week = 13 hours

TRMO 3101 (Applied Thermodynamics - Refrigeration/Air Conditioning)

This is both a theory and practical course in the topic of refrigeration and air conditioning. It should draw on knowledge gained in Thermodynamics in the specific application refrigeration.

Refrigeration Cycles; Refrigeration Processes-Thermodynamics; Refrigerants-Properties; System Analysis; Component Analysis; Psychrometry; Air Conditioning Processes

Prerequisite - TRMO 2100 (Thermodynamics)

Duration - 13 weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

TRMO3103 (Thermodynamics)

This course is an intermediate level course following TRMO 2100 and 2200 with specific applications to systems in the marine industry.

Air Compressors; Steam Turbines; Gas Turbines; Heat Transfer; Heat Exchangers

Prerequisite - TRMO 2100 (Thermodynamics)

Duration - 13weeks

Lectures - 3 hours/week

Laboratories - 1 hour/week

TRMO 3106 (Applied Thermodynamics - Refrigeration/Air Conditioning)

This is both a theory and practical course in the topic of refrigeration and air conditioning. It should draw on knowledge gained in Thermodynamics in the specific application refrigeration.

Refrigeration Cycles; Refrigeration Processes-Thermodynamics; Refrigerants-Properties; System Analysis; Component Analysis; Psychrometry; Air Conditioning Processes

Prerequisite - TRMO 2105 (Thermodynamics)

Duration - 5 weeks

Lectures - 8 hours/week = 40 hours

Laboratories - 2 hours/ week every week for 5 labs = 10 hours

TRMO 3107 (Thermodynamics)

This course is an intermediate level course following TRMO 2100 (Thermodynamics) and TRMO 2200 (Thermodynamics) with specific applications to systems in the marine industry.

Air Compressors; Steam Turbines; Gas Turbines; Heat Transfer; Heat Exchangers

Prerequisite - TRMO 2105 (Thermodynamics)

Duration - 13 weeks

Lectures - 3 hours/week = 39 hours

Laboratories - 1 hour/week = 13 hours

WKPR 0100 (Fitting Shop)

This is an introductory fitting shop course designed to introduce the student to fitting shop safety, terminology, and machinery and to provide hands-on experience with the hand and power tools used in a fitting shop.

Fitting Shop Safety; Layout and Layout Tools; Selection, Care, and the Use of Files; Selection, Care, and the Use of Hacksaws; Drills and Drill Presses; Selection and the Use of Taps; Selection and the Use of Dies; and Metrology

Duration - 13 weeks

Lectures - 1 hour/week

Practical Exercises - 2 hours/week

WKPR 0103 (Welding Shop)

This is an introductory welding course designed to introduce the student to welding shop safety, terminology, and tools and equipment and to provide hands-on experience with the welding tools and equipment used in a welding shop.

Safety; Oxy-Acetylene Equipment Orientation and Set-Up; Operating Oxy-Acetylene Cutting Equipment; Oxy-Acetylene Fusion Welding; Oxy-Acetylene Non-Fusion (Brazing); Shielded Metal Arc Welding; and Testing

Duration - 13 weeks

Shop - 4 hours/week

COURSE DESCRIPTIONS

WKPR 0107 (Welding and Fitting Shop I)

This introductory course is designed to give the student hands-on experience with the practical aspects of welding and fitting.

Offshore Fabrication Work Environment; Safety Requirements; Structural Steel; Hand Measuring and Layout Tools; Procedures used to Fabricate using Various Structural Shapes; Hand and Power Cutting Tools; Drilling and Threading Tools; Grinding and Finishing; Bending and Rolling; Stationary Powered Shearing; Iron Worker Operation; Oxy-Fuel Cutting, Heating and Gouging; Fusion, Brazing and Braze Welding; SMAW I (Shielded Metal Arc Welding); Build-up of Metal Parts; SMAW II (Fillet Weld Flat and Horizontal; Metallurgy, Expansion and Contraction Control; Jigs and Fixture Fabrication

Co-requisite - STWK 0108 (Fabrication Theory I); STWK 0107 (Welding Theory I)

Duration - 13 weeks

Laboratories - 21hours/week

WKPR 0200 (Machine Shop)

This course is designed to add to, and further develop the skills acquired in WKPR 0100. The student will be given instruction and hands-on experience in the use of machine shop machinery and methods.

Lathe Components and Their Functions; Use, Care, and Maintenance of the Lathe; Use, Care, and Maintenance of Pedestal and Bench Grinders; HSS and Carbide Tool Bit Terminology and Geometry; HSS Tool Bit Grinding; and Sawing Machines

Prerequisite - WKPR 0100 (Machine Shop)

Duration - 13 weeks

Lectures/Shop - 4 hours/week

WKPR 0207 (Welding and Fitting Shop II)

This intermediate course is designed to enhance the student's practical knowledge of offshore steel fabrication.

Air Carbon Arc Cutting and Gouging; Procedures Used To Remove A Weld From A Joint Using ACA (Air Carbon Arc) Process; GMAW 2 – Fillet Weld All Positions, Mild Steel; GMAW 3 – Groove Weld All Positions, Mild Steel; FCAW (Flux Cored Arc Welding) I – Set-Up and Deposit A Weld; Assembly and Disassembly of FCAW Equipment; Troubleshooting and Maintenance Procedures For FCAW Equipment; FCAW 2 – Fillet and Groove Weld Plate (All Positions); Procedures Used To Weld Plate In All Positions Using Flux Cored Wire; Various Gases and Gas Mixtures; Weld Faults and Their Causes; Procedures Used To Test Welds; GTAW (Gas Tungsten Arc Welding) I – Set-Up; Procedures Used To Establish and Maintain An Arc; Procedures Used To Test Welds; Quality Control; Heat Treatment; Quality Control and Quality Assurance.

Prerequisite - STWK 0107 (Welding Theory I); STWK 0108 (Fabrication Theory I); WKPR 0107 (Welding and Fitting Shop I)

Duration - 13 weeks

Laboratory - 0/17

WKPR 0300 (TIG Welding)

This introductory level course is designed to familiarize the student with the practical aspects of Gas Tungsten Arc Welding (GTAW).

Gas Tungsten Arc Welding (GTAW) 2 – Fillet Weld All Positions, Mild Steel; Principles and Applications; GTAW Process; Fillet Welds on Tee Joints in all Positions; Procedures Used to Test Welds; Weld Faults.

Prerequisite - Successful completion of all courses in Term 1 and Term 2

Duration - 5 weeks Labs - 0/6

WKPR 1103 (Fitting Shop)

This is a pre-employment skills training course designed to teach the student to identify and to select the proper tools for a given application. The student will also learn the safe and proper use of tools.

Hand Tools; Wrenches; Special Tools; Precision Tools; Gasket Making; Value Stem Packing; Metal Shaping

Duration - 13 weeks

Laboratory - 4 hours/week

WKPR 1104 (Machine Shop)

This is an introductory course designed to give instruction and hands-on practice in metrology, basic lathe operations, and the use and maintenance of bench girders.

Introduction to Machine Shop; Lathe Components and their Functions; Use, Care, and Maintenance of the Lathe; Use, Care, and Maintenance of Bench and Pedestal Grinders; HSS and Carbide Tool Bit Terminology and Geometry; HSS Tool Grinding; Spindle Nose Tooling; Methods of Chucking; Metrology; Machining of 60 Degree External and Internal Unified Thread; Thread Terminology

Duration - 13 weeks

Laboratories - 4 hours/week

WKPR 1106 (Fitting Shop)

This is a pre-employment skills training course designed to teach the student to identify and to select the proper tools for a given application. The student will also learn the safe and proper use of tools.

Hand Tools; Wrenches; Copper Tubing; Gasket Making; Value Stem Packing; Piping; Metal Shaping

Duration - 5 weeks

Lectures - 1 hour/week

Laboratory - 7 hours/week

WKPR 1107 (Welding Shop)

This course is designed to provide students with step-by-step theoretical welding instruction and applications to permit them to develop practical skills in a welding shop environment. As the level of training progresses, students are shown how their newly developed skills can be used in repair techniques.

Welding Safety; Oxygen Acetylene Cutting; Oxygen-Acetylene Welding; Oxygen-Acetylene Brazing; Testing

Duration - 5 weeks
Lectures - 1 hour/week
Laboratory - 7 hours/week

WKPR 1108 (Machine Shop)

This is an introductory course designed to give instruction and hands-on practice in metrology, basic lathe operations, and the use and maintenance of bench grinders.

Introduction to Machine Shop; Lathe Components and Their Functions; Use, Care, and Maintenance of the Lathe; Use, Care, and Maintenance of Bench and Pedestal Grinders; HSS and Carbide Tool Bit Terminology and Geometry; HSS Tool Grinding; Spandex Nose Tooling; Methods of Chucking; Metrology; Machining of 60-degree External and Internal Unified Thread; Thread Terminology

Duration - 5 weeks
Lectures - 1 hour/week
Laboratory - 7 hours/week

WKPR 1109 (Welding Shop I)

This course is designed to provide students with theoretical and practical oxygen/acetylene gas cutting and welding skills suitable for the marine environment.

Welding Safety; Oxygen-Acetylene Cutting; Oxygen-Acetylene Welding; Oxygen-Acetylene Brazing

Duration - 5 weeks
Lecture - 1 hour/week
Laboratories - 7 hours/week

WKPR 1110 (Fitting Shop I)

This is a skills training course designed to teach the student how to identify, select and safely use proper tools for given applications.

Shop Safety, Hand Tools and Wrenches, Electric and Pneumatic Hand Tools, Metrology, Copper Pipe and Tubing, Sealing Arrangements

Duration - 13 weeks
Lecture - 0 hours a week = 0 hours total
Laboratories - 3 hours a week = 39 hours total

WKPR 1117 (Machine Shop I)

This is an introductory skills training course designed to give the student instruction and hands-on practice in basic lathe operations and bench grinders.

Introduction to Machine Shop; Lathe Components and their Functions; Use, Care, and Maintenance of the Lathe; Use, Care, and Maintenance of Bench and Pedestal Grinders; HSS and Carbide Tool Bit Terminology and Geometry; HSS Tool Grinding; Spindle Nose Tooling; Methods of Chucking; Machining 60-degree External and Internal Unified Thread; Thread Terminology.

Duration - 13 weeks
Lectures - 0 hours/week = 0 hours total
Laboratory - 4 hours/week = 52 hours total

WKPR 1200 (Fitting Shop II)

This is a skills-training course designed to give the student practice identifying and selecting tools for given applications. The student will practice using these tools safely and properly on shop projects.

Stationary Workshop Tools, Metal Fasteners, Piping, Alignment, Pressure Gauges

Prerequisite - WKPR 1110 (Fitting Shop I)
Duration - 13 weeks
Lecture - 0 hours a week = 0 hours total
Laboratories - 3 hours a week = 39 hours total

WKPR 2104 (Fitting Shop)

This is a pre-employment skills training course designed to give the student practice in identifying and selecting the proper tools for a given application. The students will also practice the safe and proper use of these tools.

Special Tools; Metal Fasteners; Rigging; Minor Overhaul and Repair

Prerequisite - WKPR 1106 (Fitting Shop) or equivalent
Duration - 5 weeks
Lectures - 1 hour/week
Laboratory - 7 hours/week

WKPR 2107 (Welding Shop)

This course is designed to give the student fundamental theoretical knowledge and to develop practical skills in electric arc welding.

Welding Safety; Metal Preparation; Electrode Selection; Welding Processes; Metallurgy of Welds; Welding Positions; Electric Arc Welding Processes; Destructive/Non-Destructive Testing

Prerequisite - WKPR 1107 (Welding Shop) or equivalent
Duration - 13 weeks
Lectures - 2 hours/week
Shop Work - 6 hours/week

WKPR 2108 (Machine Shop)

This course is designed to add to, and to further develop skills acquired in WKPR 1108 (Machine Shop). The student will be given instruction and hands-on practice in the speeds and feeds for various machining operations, cutting fluids, power saws, drills and drilling (lathe), and taper turning, as well as in the use of steady and follower rests, and other lathe operations such as boring, reaming, knurling, parting, recessing, tapping, milling machine speeds and feeds, indexing head, and machining of spur gears, machine ability of various metals, uses of Acme Threads, machining of Acme Threads, uses of Square Threads, machining of Square Threads, Tool Bit Grinding and Drill Bit Sharpening.

COURSE DESCRIPTIONS

Cutting Speeds and Feeds; Cutting Fluids; Sawing Machines; Drills and Drilling (Lathe); Taper Turning; Other Lathe Operations; Use of Steady and Follower Rests; Indexing Heads; Spur Gear Cutting; Machine Ability; Acme Threads; Square Threads; Tool Bit Grinding; Drill Bit Sharpening

Prerequisite - WKPR 1108 (Machine Shop) or equivalent

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 6 hours/week

WKPR 2113 (Welding II)

This course is designed to provide students with theoretical and practical oxygen/acetylene gas cutting and electric arc welding knowledge that will permit them to develop skills suitable for the marine environment.

Welding Safety; Oxygen-Acetylene Cutting; Metal Preparation; Electrode Selection; Welding Processes; Metallurgy of Welds; Welding Positions; Electric Arc Welding Processes.

Prerequisite - WKPR 1109 (Welding I) or equivalent

Duration - 13 weeks

Laboratories - 4 hours/week

WKPR 2115 (Fitting Shop I)

This is a skills training course designed to teach the student how to identify, select and safely use proper tools for given applications.

Hand Tools; Wrenches; Copper Tubing; Gasket Making; Valve Stem Packing; Piping; Metrology.

Duration - 5 weeks

Laboratory - 8 hours/week = 40 hours total

WKPR 2116 (Fitting Shop II)

This is a skills training course designed to give the student practice in identifying and selecting the tools for a given application. The student will also practice the safe and proper use of these tools in the completion of shop projects.

Special Tools; Metal Fasteners; Rigging; Fitting Shop Projects.

Prerequisite - WKPR 2115 (Fitting Shop I) or equivalent

Duration - 13 weeks/4 hours

Laboratory - 4 hours/week = 52 hours

WKPR 2117 (Machine Shop II)

This is a skills training course designed to give instruction and hands-on practice in the safe and efficient use of Machine Shop tools and equipment.

Cutting Speeds and Feeds; Cutting Fluids; Sawing Machines; Drills and Drilling (Lathe); Taper Turning; Other Lathe Operations; Use of Steady and Follower Rests; Machine Shop Projects

Prerequisite - WKPR 1117 (Machine Shop I) or equivalent

Duration - 13 weeks/52 hours

Shop - 4 hours/week = 52 hours

WKPR 2118 (Workshop Practice)

This course is designed to provide students with a background in materials and materials processing specifically for ROV operations. Emphasis is placed on the safe, proper and suitable use of tools.

Classification of ROV metals (Stainless Steels, Aluminum, and Titanium); Identification of ROV Metals; Properties of ROV Metals; Other ROV Materials; Special Topics; Welding Safety; Oxygen-Acetylene Cutting; Electrode Selection; Welding Processes; Welding Positions; Electric Arc Welding Processes; Hand Tools and Wrenches; Selection, Care and the Use of Files; Drills and Drill Presses; Selection and the Use of Taps and Dies; Metrology; Piping

Duration - 13 weeks

Laboratories - 4 hours/week

WKPR 2119 (MESD Workshop Practice)

This new course will give the students hands-on appreciation for the physical attributes and function of the machinery employed in the systems that they design in their other courses.

Safety; Pumps; Valves and Manifolds; Oily Water Separators; Air Compressors; Heat Exchangers; Purifiers; Boiler Systems

Prerequisite - ENSY 1202 (Introduction to MESD)

Duration - 5 weeks

Lectures - 2 hours/week = 10 hours total

Laboratories - 8 hours/week = 40 hours total

WKPR 2217 (Machine Shop III)

The student will be given instruction and hands-on machining practice in the production of Acme and Square Threads and Machine Shop Projects.

Acme Threads; Square Threads; Tool Bit Grinding; Drill Bit Sharpening; Indexing Heads; Spur Gear Cutting; Machinability; Machine Shop Projects

Prerequisite - WKPR 2117 (Machine Shop II) or equivalent

Duration - 5 weeks/40 hours

Laboratory - 8 hours/week = 40 hours

WKPR 2301 (Fitting Shop)

This course is designed so the student will be able to carry out various mechanical related jobs in the performance of installing and repairing instrumentation.

Safety; Filing and Hack Sawing; Drills and Drill Presses; Use of Taps and Dies; Piping; Soldering of Copper Pipe; Sheet Metal Shaping

Prerequisites - WKPR 2115 (Fitting Shop I)

Duration - 5 weeks

Lecture - 1 hour/week

Laboratory - 7 hours/week

WKPR 3100 (Machinery Maintenance Shop)

This course is designed to give students a knowledge and understanding of the fundamentals of machinery maintenance programs, machinery construction and function. In addition, the course will provide hands-on experience with machinery and related equipment.

Safety; Gauges; Alignment; Pumps; Air Compressors; Heat Exchangers; Bearings; Burner Fundamentals; Diesel Engines; Maintenance Planning; Maintenance Plans; Scheduling Maintenance

Prerequisite - WKPR 2104 (Fitting Shop)

Duration - 13 weeks

Lectures - 2 hours/week

Laboratories - 6 hours/week

WKPR 3101 (Machinery Maintenance I)

This course is designed to give students an understanding of shipboard equipment, while providing hands-on maintenance experience with the dismantling, inspection, part replacement and assembly of marine equipment.

Safety; Alignment; Pumps; Air Compressors; Heat Exchangers; Bearings; Burner Fundamentals; Diesel Engines.

Prerequisite - WKPR 2116 (Fitting Shop II)

Duration - 13 weeks

Lecture - 1 hour/week

Laboratories - 3 hours/week

WKPR 3106 (Workshop Practice)

This course is designed to provide students with a background in materials and materials processing specifically for ROV operations. Emphasis is placed on the safe, proper and suitable use of tools.

Classification of ROV metals (Stainless Steels, Aluminum, and Titanium); Identification of ROV Metals; Properties of ROV Metals; Other ROV Materials; Special Topics; Welding Safety; Oxygen-Acetylene Cutting; Electrode Selection; Welding Processes; Welding Positions; Electric Arc Welding Processes; Hand Tools and Wrenches; Selection, Care and the Use of Files; Drills and Drill Presses; Selection and the Use of Taps and Dies; Metrology; Piping

Duration - 3 weeks

Laboratories - 19 hours/week

WKPR 3200 (Machinery Maintenance Shop)

This course is designed to give students a knowledge and understanding of the fundamentals of the quality control used with maintenance requirements for marine equipment. In addition, the course will provide hands-on experience with equipment to familiarize the student with the assembly, dismantling, inspection, and part replacement of machinery and related equipment.

Safety Relief Valves; Purifiers; Oily Water Separators; Gearing; Steering Systems; Diesel Engines (ICE); Quality Control; Quality Manuals; Quality Specifications

Prerequisites - WKPR 3100 (Machinery Maintenance Shop)

Duration - 5 weeks

Lectures - 2 hours/week

Laboratory - 6 hours/week

WKPR 3204 (Machinery Maintenance II)

This course is designed to give students increased understanding of preventative maintenance programs and knowledge of shipboard equipment, while providing hands-on maintenance experience.

Safety Relief Valves; Purifiers; Oily Water Separators; Gearing; Steering Systems; Maintenance Planning; Maintenance Plans; Scheduling Maintenance

Prerequisite - WKPR 3101 (Machinery Maintenance II) or equivalent

Duration - 13 weeks

Lectures - 1 hour/week

Laboratory - 4 hours/week

WKPR 3206 (Welding III)

This course is designed to provide students with theoretical and practical oxygen/acetylene gas cutting and welding knowledge that will permit them to enhance welding skills suitable for the marine environment.

Welding Safety; Oxygen-Acetylene Cutting; Electric Arc Welding Processes; Destructive/Non-Destructive Testing; MIG and TIG Welding

Prerequisite - WKPR 2113 (Welding II) or equivalent

Duration - 13 weeks

Lectures - 1 hour/week

Laboratories - 4 hours/week

WKTM 0010 (Work Term - Fire Rescue)

This course will provide the student with practical work experience and the opportunity to develop the competency required of a Firefighting Recruit.

WKTM 0010 (Fire Rescue)

Prerequisites - Successful completion of all courses within the program; Successful completion of SERT fitness test; NFPA 1001 Level I; Clear Certificate of Conduct

Duration - Students must complete a minimum work term of 384 hours duration.

WKTM 0011 (Work Term - Bridge Watch Program)

WKTM 0011 provides the student with the necessary practical experience to develop the competency requirements of a bridge watch rating, as outlined by STCW '95. For most students, the work term represents their first experience in a ship environment. As such, they will be expected to gain an understanding of the vessel's operation, safety requirements, and discipline.

NOTE: To challenge Transport Canada's Bridge Watchman examination, the student must have accumulated a minimum of 60 days of Transport Canada certified sea time. (Refer to Transport Canada Document: TP2293 "The Examination and Certification of Seafarers.")

COURSE DESCRIPTIONS

Prerequisites - A valid seafarer's medical certificate is required for all sea based work terms. In addition, the student must have successfully completed all program courses before registering in an approved work term.

Duration - The duration of the work term shall normally be sixty days aboard the assigned vessel.

WKTM 0100 (Work Term - Marine Diesel Mechanics)

WKTM 0100 is designed to ensure that the student gains the practical experience to begin development of the competency requirements of a Ship's Engine Room Rating or a shore-based Marine Diesel Mechanic with practical applicable knowledge. Each successfully completed work term is regarded as one course credit. To meet the requirements of graduation from the Marine Diesel Mechanics Vocational Certificate Program, the student must have successfully completed WKTM 0100.

Prerequisite - MREK 0200 (Marine Engineering Knowledge 0200); BSMG 0202 (Workplace Preparation); SFTY 1114 (Basic Safety - STCW'95 VI/I); SFTY 1117 (Survival Craft - STCW'95 VI/2), and SFTY 1102 (Marine Basic First Aid); Valid Seafarer's Medical

Schedule - Option 1: Sea-based work term

Students who are placed in a sea-based work term must complete a minimum of 60 Transport Canada approved calendar days as an engineering cadet signed-on onboard ship, must have documented Transport Canada testimonials of sea service, must present acceptable proof of on-the-job performance using the School of Maritime Studies' Employer Evaluation form, and must complete the Marine Diesel Mechanics Sea Phase Manual. This will result in graduate eligibility for the Engine Room Rating Certificate.

Marine Diesel Mechanics Sea Phase Manual:

The Marine Diesel Mechanics Sea Phase Manual is an integral part of the training program and provides a comprehensive summary of both practical and theoretical knowledge gained while on the work term. The student must complete all applicable questions to the best of his/her ability. The student must present this Manual to the Program Chair upon completion of the work term.

Option 2: Shore-based work term

Students who are placed in a shore-based work term must complete a minimum of 50 days duration documented by the Marine Diesel Mechanics Workbook. Note: Students who choose this option will not be eligible for the Engine Room Rating Certificate upon graduation.

Marine Diesel Mechanics Workbook:

The Marine Diesel Mechanics Workbook is an integral part of the training program and provides a comprehensive daily log of the student's observations and activities. The student must present this Workbook to the Program Chair upon completion of the work term.

WKTM 0103 (Offshore Steel Fabrication Work Term)

WKTM 0103 is designed to provide the student with practical experience in offshore steel fabrication. To meet the graduation requirements of the Offshore Steel Fabrication Technical Certificate Program, the student must successfully complete WKTM 0103.

Prerequisites - Successful completion of all Technical Session courses.

Schedule - 80 hours

WKTM 1002 (Work Term - Preparation Seminar)

This is a short seminar course designed to prepare participants for the work term. Participants will have opportunities to develop professional work skills and techniques they will use during the work term experience.

Roles, Responsibilities and Benefits; The Placement Process; Work Term Procedures

Duration - 6 weeks

Lectures - 6 hours (1 hour/week)

WKTM 1102 (Sea Phase 1 - Nautical Science)

This is the first of two Sea Phases designed to ensure that the Officer Cadet gains the practical experience to become a competent ship's officer. For most students, the first Sea Phase represents the beginning of their sea-going career and, as such, they will be expected to gain a full understanding of the vessel's operations, safety awareness and discipline.

It should be understood that by the end of their second Sea Phase the Cadet must have accumulated at least twelve (12) months of sea time in order to meet the requirements of Transport Canada's Marine Safety Directorate. Students are expected to observe, learn, develop and adopt the high standards of professionalism expected of the ship's officer.

WKTM 1102 (Sea Phase I)

Prerequisites - Successful completion of all Technical Session 1 courses

Duration - Two months (subject to placement restrictions)

WKTM 1103 (Work Term I - Marine Engineering)

WKTM 1103 is designed to ensure that the student gains practical experience under Option 1 or Option 2. Under Option 1 students begin development of the competency requirements of a Ship's Engineering Officer; under Option 2 students gain Marine Engineering Technologist practical experience. Each successfully completed work term is regarded as one course credit. To meet the requirements for graduation from the Marine Engineering Diploma of Technology Program, the student must successfully complete a total of three (3) work terms.

Prerequisite - A valid seafarer's medical certificate is required for Option 1. In addition, the student must have successfully completed the following courses before acceptance in approved work terms: MREK 2208 (Marine Engineering Knowledge II); WKPR 2116 (Fitting Shop II); WKPR 2113 (Welding Shop II); WKPR 2217 (Machine Shop III); SFTY 1114 (Basic Safety - STCW'95 VI/1); BSMG 3113 (PRM)

WKTM 1105 (Remotely Operated Vehicles)

This work term is designed to ensure that the ROV student gains the practical experience to become a competent ROV Operator. Students will be expected to gain a full understanding of the vessel's operations, safety awareness and discipline. Students are expected to observe, learn, develop and adopt the high standards of professionalism expected of an ROV Operator.

WKTM 1105

Prerequisites - Technical Session 2 of the ROV Program
Schedule - Students are required to work a minimum of 320 hours to constitute a work term

WKTM 2102 (Sea Phase 2 - Nautical Science)

This is the second of two Sea Phases designed to ensure that the Officer Cadet gains the practical experience to become a competent ship's officer. It should be understood that by the end of the second Sea Phase the student must have accumulated a minimum of twelve (12) months sea time in order to meet the requirements of the program and Transport Canada's Marine Safety Directorate. Without this sea experience the student cannot graduate.

Prerequisites - WKTM 1102 (Sea Phase 1) and all Technical Session 2 courses which include: NASC 3101 (Navigation Safety - Collision Regulations); NASC 2107 (Restricted Operator's Certificate - Maritime Commercial); and NASC 2201 (Basic Tanker Safety)

WKTM 2103 (Work Term II - Marine Engineering)

WKTM 2103 is designed to ensure that the student gains practical experience under Option 1 or Option 2. Under Option 1 students continue development of the competency requirements of a Ship's Engineering Officer; under Option 2 students gain additional Marine Engineering Technologist practical experience. Each successfully completed work term is regarded as one course credit.

To meet the requirements for graduation from the Marine Engineering Diploma of Technology Program, the student must successfully complete a total of three (3) work terms.

Prerequisites - A valid seafarer's medical certificate is required for Option 1. In addition, the student must have successfully completed the following courses before acceptance in approved work terms: MREK 3106 (Marine Engineering Knowledge III); WKPR 3101 (Machinery Maintenance I); WKTM 1103 (Work Term I)

Duration - Option 1: Students must complete a minimum of 70 days of Transport Canada certified sea time and achieve the articulated evaluation in order to meet WKTM 2103 requirements.

Option 2: Students complete a minimum 10-week work term in marine related, shore-based companies.

WKTM 2106 (Work Term - Marine Environmental)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 2106 (Work Term - Marine Environmental Technology)

Prerequisites - WKTM 1002 (Work Term Preparation Seminar); MENV 2100 (Marine Environmental); All Technical Session 1 Courses; All Term 4 courses

Duration - 8 weeks

(Students are available from mid-May to the end of August)

WKTM 2107 (Work Term - Food Technology)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 2107 (Work Term - Food Technology)

Prerequisites - Clear Standing (CL) or better in the academic semester immediately prior to the work term semester.

WKTM 1002 (Work Term Preparation Seminar); MATH 1101 (Introduction to Calculus); FDTE 2112 (Food Sanitation); BIOL 2102 (Microbiology) or BIOL 2105 (Microbiology)

Duration - 8 weeks

(Students are available from mid-May to the end of August)

WKTM 3103 (Work Term III - Marine Engineering)

WKTM 3103 is designed to ensure that the student gains practical experience under Option 1 or Option 2. Under Option 1 students continue development of the competency requirements of a Ship's Engineering Officer; under Option 2 students gain additional Marine Engineering Technologist practical experience.

Each successfully completed work term is regarded as one course credit. To meet the requirements for graduation from the Marine Engineering Diploma of Technology Program, the student must successfully complete a total of three (3) work terms.

Prerequisite - A valid seafarer's medical certificate is required for Option 1. In addition, the student must have successfully completed the following course before acceptance in an approved work term: WKTM 2103 (Work Term 2)

Duration - Option 1: Students must complete a minimum of 70 days of Transport Canada certified sea time

Option 2: Students complete a minimum 10-week work term in marine related, shore-based companies.

WKTM 3300 (Professional Orientation)

This course will provide students with more practical experience in the environmental field and the opportunity to further develop industry related work skills.

WKTM 3300 (Professional Orientation)

COURSE DESCRIPTIONS

Prerequisites - WKTM 2106 AND all courses listed in: Technical Sessions II and Terms 5 and 6

NOTE: The appropriateness of the professional orientation placement will be determined by the Placement Officer in consultation with the Program Chair.

WKTM 3301 (Work Term - Food Technology)

This work term is intended to provide students with a second opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 3301 (Work Term – Food Technology)

Prerequisites - Clear standing (CL) or better in the academic semester immediately prior to the work term semester. WKTM 2107 (Work Term – Food Technology)

Duration - 8 weeks (Students are available from early May to the end of August.)

WKTM 3302 (Work Term - Bachelor of Technology - Ocean Mapping)

This work term is designed to ensure that the Ocean Mapping student gains the practical and technical experience to become competent in the field of Ocean Mapping. Students will be expected to gain a full understanding of the acquisition, analysis, dissemination and management processes associated with ocean data through the utilization of marine surveying equipment, remote sensing technologies, geographic information systems and oceanographic instrumentation. Students are expected to observe, learn, develop and adopt the high standards of professionalism expected of an Ocean Mapping Graduate to better prepare them for an exciting and rewarding career within this sector.

WKTM 3302 (Work Term - Bachelor of Technology - Ocean Mapping)

Prerequisites - Technical Session 3

Schedule - Students are required to work a minimum of 320 hours to constitute a work term

WKTM 3303 (Work Term - Bachelor of Technology - Ocean Instrumentation)

This work term is designed to ensure that the Ocean Instrumentation (01) student gains the practical experience to become a competent marine instrumentation technologist. Students will be expected to gain a full understanding of the duties of an instrumentation technologist, safety awareness and discipline. Students are expected to observe, learn, develop and adopt the high standards of professionalism expected of an instrumentation technologist.

WKTM 3303 (Work Term - Bachelor of Technology (Ocean Instrumentation))

Prerequisites - Technical Session 3

Schedule - Students are required to work a minimum of 320 hours to constitute a work term.

WKTM 4109 (Advanced Diploma - Integrated Coastal and Ocean Management)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 4109 (Work Term - Integrated Coastal and Ocean Management)

Prerequisites - Terms One, Two and Technical Session - Advanced Diploma in Integrated Coastal and Ocean Management

Duration - 13 weeks

WKTM 4110 (Work Term - Water Quality)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 4110 (Work Term - Water Quality)

Prerequisites - Terms One, Two and Technical Session Advanced Diploma in Water Quality

Duration - 13 weeks

WKTM 4111 (Advanced Diploma in Food Safety)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 4111 (Work Term - Food Safety)

Prerequisites - Terms One and Two Advanced Diploma in Food Safety

Duration - 13 weeks

WKTM 4112 (Work Term - Advanced Diploma in Sustainable Aquaculture)

The work term provides students with an opportunity to learn, develop, and practice high standards of professional behaviour and performance while in the work environment.

WKTM 4112 (Work Term - Sustainable Aquaculture)

Prerequisites - Terms One and Two Advanced Diploma in Sustainable Aquaculture

Duration - 13 week