# Ocean and Naval Architectural Engineering

Memorial University's ocean and naval architectural engineering undergraduate program is rated one of the top programs of its kind in North America. It is the only one in the world with mandatory co-operative education. The program provides the comprehensive education needed in the design, operation and maintenance of ocean-going systems such as ships, floating structures, underwater vehicles and offshore platforms.

Graduates of the ocean and naval architectural engineering program will be able to implement academic knowledge and integrated co-operative education experiences in specialized marine environments including research and development, design, ship production, operations, offshore exploration and production, classification and regulation.

## Co-operative Education Opportunities

Co-operative education experiences of students within the Department of Ocean and Naval Architectural Engineering have included a wide range of industries and opportunities all around the world, including Canada, Europe, the United States of America and Australia. Examples of what our students can provide to employers include:

**Shipbuilding** – assisting naval architects with design, construction, re-fit, shore based activities and maintenance of ocean-going vessels;

**Vessel design** – supporting engineers through design, structural analysis, hydrodynamic and stability assessments and performance evaluation;

**Offshore oil and gas** – assisting in the construction, design, operations and performance evaluation of offshore structures and related systems;

**Classification** – surveying and implementing design standards on vessels and offshore structures;

**Research and development** – conducting model testing, Arctic exploration, design standards development and environmental and green technology development;

**Ocean engineering** – designing and troubleshooting of underwater vehicles and ocean equipment;

**National defence** – supporting designers, constructors, engineers and research operators in the field of national defence and

**Reliability and safety** – assessing the safety and reliability of ocean-going vehicles, designing inspection and maintenance strategies.

MEMORIAL UNIVERSITY

**CO-OPERATIVE EDUCATION**
Faculty of Engineering and Applied Science

# Ocean and Naval Architectural Engineering Program Organizational Chart

| Term | Fall | Winter | Spring |
|---|---|---|---|
| Year 1 | **Engineering One** | | |
| | Engineering Statics<br>Introduction to Programming<br>Engineering Graphics and Design<br>Mechanisms and Electric Circuits | Physics<br>Chemistry<br>Mathematics<br>English<br>Professional Development Seminars | Work Term 1*<br><br>*If students complete engineering one requirements within first two terms. |
| Year 2 | **Academic Term 3**<br>Ocean/Naval Design<br>Ocean Engineering Hydrostatics<br>Engineering Professionalism I<br>Thermodynamics I<br>Dynamics<br>Calculus III | **Work Term**<br>Work Term 1<br>Work Term 2 | **Academic Term 4**<br>Resistance and Propulsion<br>Marine Fluid Dynamics<br>Mechanics of Solids I<br>Marine Materials<br>Ordinary Differential Equations I |
| Year 3 | **Work Term**<br>Work Term 1<br>Work Term 2<br>Work Term 3 | **Academic Term 5**<br>Marine Propulsion<br>Vector Calculus<br>Intermediate Physical Oceanography<br>Marine Vibrations<br>Probability and Random Processes in Ocean Engineering | **Work Term**<br>Work Term 2<br>Work Term 3<br>Work Term 4 |
| Year 4 | **Academic Term 6**<br>Ship Structures I<br>Floating Ocean Structures Design<br>Marine Engineering Systems<br>Marine Cybernetics<br>Dynamics of Ocean Vehicles | **Work Term**<br>Work Term 3<br>Work Term 4<br>Work Term 5 (Optional) | **Academic Term 7**<br>Ocean Systems Design<br>Ship Structures II<br>Marine Hydrodynamics<br>Manoeuvring of Ocean Vehicles<br>One technical elective |
| Year 5 | **Work Term**<br>Work Term 4<br>Work Term 5 (Optional)<br>Work Term 6 (Optional) | **Academic Term 8**<br>Engineering Professionalism II<br>Ocean and Naval Architectural Engineering Project<br>Three technical electives | |

**More information ...**

Ocean and Naval Architectural Engineering Departmental Office
709-864-2706
www.mun.ca/engineering/ona

Course Specific Information