

Short Course

Introduction to Ships and the Shipping World

October 24–November 2, 2023

C I S M a R T

CISMaRT's short course provides a comprehensive introduction to the maritime world with a focus on ships. This is accomplished by summarizing the stages in the lifecycle of ships starting at the design stage through construction and finally to operations and maintenance. The regulatory environment in which these are undertaken is also described. This course will be delivered through Brightspace, a learning management system.

Module A



Types of Ships and Their Functions and Features

This module introduces the key issues concerning the design of ships and other vessels, and describes various ship types.

- Basic parameters used in naval architecture to characterize ship designs, and the environment they operate in including waves, ice and winds
- Characterizing the geometry and constraints on vessel design
- Descriptions of the most common types of ships focusing on those of most interest to Canada
- Case study on a small fishing vessel describing the main features that influence their design

Lecturer: **Dan Walker, Associate Professor of Ocean and Naval Architectural Engineering at Memorial University**

Module B



Regulatory Environment I History and Current Operations

This module describes the history of marine regulations dating from medieval times to the present. Also described are the main international and national regulations that govern shipping.

- Historical origins and development of marine regulation
- The role of the International Maritime Organization (IMO) and the main instruments concerned with maintaining the safety of shipping
- The role of insurance, classification societies and other standards organizations
- Marine regulations for Canadian waters, what they are, and the government agencies involved

Lecturer: **Andrew Kendrick, President, Silvery Consulting Inc.**

Module C



Regulatory Environment II Future Development and Challenges

This module continues from Module B to review the initiatives now underway in the regulatory world and their implications for stakeholders. The two main themes discussed are digitization and environmental protection.

- IMO ongoing efforts to reduce greenhouse gas emissions from shipping
- Various IMO requirements currently implemented and others under development
- Impact of rapid development in information technology providing opportunities and challenges
- Regulations for autonomous shipping under development
- Challenges associated with cybersecurity and the impact on safety

Lecturer: **Andrew Kendrick, President, Silvery Consulting Inc.**

Module D



Shipbuilding

This module describes the steps in the construction of a ship starting with establishing owners' requirements through to the launch of the ship. Canadian shipbuilding programs, namely AOPS 7-8 CCGV, are used to illustrate the stages of construction. The various steel plate undergoes to form components and assemblies that are eventually welded together to form the hull and superstructure are outlined. The integration of the various systems that are accommodated in the ship is described. The management of this entire complex system from start to finish is outlined concluding with tests and trials that the completed ship undergoes.

- Basic and detail design phases
- Master schedule and supply chain
- Materials and welding
- Production engineering and design
- Detail planning and bill of materials
- Production phases
- Launch process
- Test and trials

Lecturer: **John Dolny, Production Engineering Manager at Irving Shipbuilding Inc. (ISI)**

Module E



Operation of Ships

This module will introduce course attendees to some of the onboard and operational aspects of the maritime industry. It is intended to provide course attendees who have no onboard experience with an understanding of how shipboard life differs from life in shore-based maritime industry professions. The lecture will cover three broad subject areas: shipboard life, voyage planning and port operations.

- Shipboard life: who is onboard and what they do
- Impact of life at sea – personal, social etc.
- Safety management systems and procedures
- Voyage planning
- Ice operations in the Arctic and the Southern Ocean
- Port operations – cargo handling, bunkering etc.

Lecturer: **Captain David (Duke) Snider, CEO and Principal Consultant of Martech Polar Consulting Ltd**

Module F



Maintenance of Ships

Ship maintenance concerns the management and engineering activity that is required to keep ships, and the systems in them, functional and safe. Maintenance is a cradle-to-grave activity and gets more intensive as the ship ages.

- Importance of maintenance, and associated business and management aspects
- Types of maintenance methodologies
- Preventive measures taken to avoid deterioration during design, construction and operation
- Repair methods
- Ship surveys
- Trends and future challenges

Lecturer: **Roger I. Basu, President of Roger Basu & Associates Inc.**