

Water and Shipping (I001940)

Course size (nominal values; actual values may depend on programme)
Credits 6.0 Study time 180 h Contact hrs 48.0 h

Course offerings in academic year 2016-2017

A (semester 2) English

Lecturers in academic year 2016-2017

De Baere, Kris	103879	lecturer-in-charge
Vantorre, Marc	TW15	co-lecturer
Verstraelen, Helen	103879	co-lecturer

Offered in the following programmes in 2016-2017	crdts	offering
Master of Science in Technology for Integrated Water Management	6	A

Teaching languages

English

Keywords

Ship, Shipping Company, IMO, Flag state, International Maritime Conventions, MARPOL, Ballast Water Management, Anti Fouling, Fresh Water O/B, Ship Recycling, Shipping Channels, Navigation Areas

Position of the course

The objective of this module is to demonstrate the impact of ships and shipping business on the world water management.

Contents

Introduction to shipping: (4 hours) (AMA + UGent)

- Definition of ship; administrative, juridical, technical, ...
- Ship types and dimensions
- Ship structure and layout, technical description of the main parts
- Introduction to ship strength and stability

Shipping Channels and Navigation areas (4 hours) (UGent) Water areas required for safe and efficient shipping traffic

- Use of water as a means of transport: approach channels, rivers, canals, harbours, anchor areas,
- Required water depth of navigation areas (squat, motions in waves, nautical bottom issues in muddy areas, tidal windows)
- Required width and layout of navigation areas
 - o Introduction to ship manoeuvring
 - o Width of approach channels based on generally accepted guidelines (e.g. PIANC)
 - o Simulation techniques for waterways design (including visit to Flanders Hydraulics Research)
- Locks: water consumption, salt water intrusion (case: Panama Canal)
- Inland shipping

Ships exploitation: (2 hours) (AMA)

Relation ship - shipping company, Charter parties, Liners - tramping, Insurance - P&I, Captains statute

Legislation and shipping: (2 hours) (AMA)

International legislation: IMO
IMO conventions and flag state national legislation
Conflict between territorial sea and flag state
Classification Societies and IACS

Major International conventions: (2 hours) (AMA)

SOLAS, LLC, Tonnage, ISPS, STCW, MARPOL, GMDSS, SAR, IMDG...

MARPOL and related items (20 hours) (AMA)**Oil pollution - Chemical pollution**

History of tankers; Pollution by hydrocarbons & chemicals: fate and impact; Effect of hydrocarbons & chemicals on marine life; Pollution response (on board and ashore); Operational - accidental pollution; Tank cleaning methods; Double hull - OPA ODME equipment; GESAMP hazard profiles

Sewage and garbage on board

Production of sewage and garbage on board; Problem to the marine environment caused by sewage and garbage; Storage of sewage and garbage on board; Treatment of sewage and garbage on board

Air pollution:

Production of pollutants on board; Problem of air pollution by ships; Treatment - limitation of pollutants

Ballast water management:

Ballast water: what it is and why it is used; Ballast water problem - invasive species; Solutions: ballast water exchange - ballast water treatment; IMO - BBC movie: invaders of the sea

Anti fouling:

Fouling: what it is and what is the problem; Anti fouling: historical problem; New solutions: epoxy paints, hard coatings

Fresh water on board:

Production; Use; Recycling; Slob tanks; Equipment

Ship recycling + Green passport: (Provisional)

Wastes; Water pollution; Inventory

Visits: (14 hours) (AMA + UGent)

Subject to availability:HZS, Marpobel, Ships terminal, Antwerp ship repair, VTS, Flanders Hydraulics Research

Initial competences

*General

None

*Sequentially

Module 1: Global water problems and integrated water management

Module 2: Integrated assessment of water and sediment quality

Final competences

- 1 • Have a general overview of a ship and the shipping business in the maritime world
- 2 • Understand the relation between national and international legislation and shipping
- 3 • Know the importance of the MARPOL and related conventions
- 4 • Have a basic knowledge about the use and production of fresh water on board
- 5 • Have a basic knowledge concerning ship recycling
- 6 Have a basic knowledge concerning horizontal and vertical dimensioning of navigation areas.
- 7 Understand the effects of confined navigation areas on ship behaviour.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Learning materials and price

Teachers syllabus

References

- K. VAN DOKKUM, Ship knowledge / a modern encyclopaedia, Enkhuizen 2003
- MARPOL 73/78 and amendments
- www.imo.org
- Marine Pollution, Geert Potters, bookboon.com
- PIANC Guidelines: Design of channels and fairways

Course content-related study coaching

Evaluation methods

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Written examination with multiple choice questions, written examination

Examination methods in case of periodic evaluation during the second examination period

Written examination with multiple choice questions, written examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Calculation of the examination mark