

## Introduction to Ships and Marine Technology (E055120)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits** 4.0

**Study time** 120 h

### Course offerings in academic year 2024-2025

A (semester 1)	English	Gent
B (semester 1)	Dutch	Gent

### Lecturers in academic year 2024-2025

Lataire, Evert	TW15	lecturer-in-charge
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### Offered in the following programmes in 2024-2025

	crdts	offering
<a href="#">Master of Science in Civil Engineering</a>	4	B
<a href="#">Master of Science in Civil Engineering</a>	4	A
<a href="#">Master of Science in Industrial Design Engineering Technology</a>	4	A

### Teaching languages

English, Dutch

### Keywords

Ships, shipping, ship stability, ship propulsion, ship motions, seakeeping, ship manoeuvring

### Position of the course

Introduction to the maritime world, providing basic information on characteristics, construction, stability, propulsion and motions of ships.

### Contents

- Shipping as part of the logistics chain: The role of shipowners, shipyards and classification societies.
- General description of the ship as a means of transport or as an implement.: Function and short description of some ship types: cargo ships, dredgers, tugs,...
- Ship structures: materials and construction systems.
- Hydrostatics and stability of floating structures: background; influence of free liquid surfaces and of hanging loads.
- Propulsion of ships (introduction): ship resistance; propulsion methods; propulsion machinery.
- Ship maneuvering by means of rudders and thrusters (introduction): fundamentals; standard maneuvers; maneuvering simulation; maneuvering in restricted waters.
- Motions of ships in waves (introduction): fundamentals; motions in navigation channels; forces on and motions of moored ships.

### Initial competences

Specific elements from the mathematics and physics courses from the bachelor's

### Final competences

- 1 Gain insight into hydrostatics and stability of floating structures.
- 2 Get acquainted with professional terminology concerning types, external characteristics, structure and primary members of maritime constructions.
- 3 Distinguish the most important physical causes of a ship's resistance. Reason out the most important parameters on which a ship's resistance depends. Define and recognise the most usual technologies used for a ship's propulsion.
- 4 Reason out the manoeuvring behaviour of a ship. Distinguish the most important

characteristics of a ship's steering equipment (rudder). Define the main techniques used to determine and evaluate a ship's manoeuvring behaviour.

- 5 Get acquainted with the specific hydrodynamic behaviour of a ship in shallow and confined navigation areas.
- 6 Give an explanation for the dynamic behaviour of a floating structure in waves. Be able to use professional terminology with respect to the behaviour of floating structures in waves.
- 7 Describe the main actors in the shipping world.
- 8 Analyse specific problems concerning hydrostatics and stability of a simple floating structure.
- 9 Execute hydrostatic calculations and stability calculations for a pontoon by means of specialised software.

#### **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**

Seminar, Lecture, Independent work

#### **Extra information on the teaching methods**

Lectures, exercises and project about the specific topics of the courses content, with the possibility of asking questions.

If possible, the lectures are supplemented with visits to relevant research institutions and companies

#### **Study material**

Type: Syllabus

Name: syllabus of this course

Indicative price: € 20

Optional: no

Language : English

Number of Pages : 300

Oldest Usable Edition : 2024

Available on Ufora : Yes

Online Available : No

Available in the Library : No

Available through Student Association : No

Type: Laptop

Name: laptop

Indicative price: € 1,000

Optional: no

Available through Student Association : No

Usability and Lifetime within the Course Unit : regularly

Usability and Lifetime within the Study Programme : regularly

Usability and Lifetime after the Study Programme : regularly

#### **References**

- Mansour, A. E., Liu, D., Paulling, J. R., & Society of Naval Architects and Marine Engineers (U.S.). (2008). Strength of ships and ocean structures. Jersey City, N.J.: Society of Naval Architects and Marine Engineers.
- Lewis, E. V., & Society of Naval Architects and Marine Engineers (U.S.). (1988). Principles of naval architecture. Jersey City: Society of Naval Architects and Marine Engineers.
- Scheepskennis (K. van Dokkum, Dokmar, Delfzijl 2001)

#### **Course content-related study coaching**

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Oral assessment

**Examination methods in case of periodic assessment during the second examination period**

Oral assessment

**Examination methods in case of permanent assessment**

Assignment

**Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

**Extra information on the examination methods**

- During examination period: oral closed-book exam, written preparation
- During semester: graded project reports.

**Calculation of the examination mark**

- Oral closed-book exam during examination period: 70%
- Project reports during semester: 30%.

The student can only pass for the entire course if for each of the above mentioned items a mark of at least 5 on 20 is obtained.

If the above conditions are not met the final mark is the minimum of 9/20 and the above mentioned weighted result.