Design of Maritime Structures (E054670)

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

Credits 3.0   **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

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

Lecturers in academic year 2023-2024

Lataire, Evert	TW15	lecturer-in-charge
Rigo, Philippe	TW15	co-lecturer

Offered in the following programmes in 2023-2024	crdts	offering
Bridging Programme Master of Science in Electromechanical Engineering(main subject Maritime Engineering)	3	B
Master of Science in Electromechanical Engineering(main subject Control Engineering and Automation)	3	A
Master of Science in Electromechanical Engineering(main subject Electrical Power Engineering)	3	A
Master of Science in Electromechanical Engineering(main subject Maritime Engineering)	3	A
Master of Science in Electromechanical Engineering(main subject Maritime Engineering)	3	B
Master of Science in Electromechanical Engineering(main subject Mechanical Construction)	3	A
Master of Science in Electromechanical Engineering(main subject Mechanical Energy Engineering)	3	A

Teaching languages

English, Dutch

Keywords

Ship structures, offshore structures, structural design, capita selecta

Position of the course

For marine structures with design parameters outside the scope of existing rules, the classification societies demand structural design calculations starting from basic principles of physics. The present course provides an introduction to such advanced design procedures. A selection of specific topics within naval architecture are explained.

Contents

- Phenomena leading to failure of marine structures: corrosion; permanent deformations, fatigue, brittle fracture, buckling of pillars, stiffeners and plates
- Vibrations of primary structure: an outline
- Introduction to reliability analysis
- Still water loads and wave loads: load spectra and long term distributions
- The capability of ships and offshore structures
- Selection of specific naval architecture

Initial competences

General arrangement, structural arrangements and construction of marine structures, Mechanics of materials, Mechanics of structures, Mechanical vibrations.

Final competences

1 Concepts: Reliability of constructions; Safety assessment of systems
2 Insights: Physical insight into the failure mechanisms for large steel structures;

The probabilistic character of loads and capability.

3 Skills: Structural design of maritime structures according to probabilistic
methods

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

Lecture, Independent work

Extra information on the teaching methods

Lectures 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.

Learning materials and price

Syllabus, 20 euro

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.

Course content-related study coaching

Assessment moments

end-of-term 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

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

During examination period: oral closed-book exam

Calculation of the examination mark