GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

Offshore Structures (E044666)

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

Credits 4.0 **Study time 120 h**

Course offerings and teaching methods in academic year 2026-2027

A (semester 2)	English	Gent	lecture	0.0h
			group work	0.0h
B (semester 2)	English	Gent	lecture	0.0h
			group work	0.0h

Lecturers in academic year 2026-2027

Kortenhaus, Andreas	TW15	lecturer-in-charge

Offered in the following programmes in 2026-2027	**crdts**	**offering**
Bridging Programme Master of Science in Engineering: Ships and Marine Technology	3	B
Master of Science in Electromechanical Engineering(main subject Maritime Engineering)	3	B
International Master of Science in Advanced Design of Sustainable Ships and Offshore Structures	3	B
Master of Science in Civil Engineering	4	A
Master of Science in Engineering: Ships and Marine Technology	3	B
Master of Science in Engineering: Ships and Marine Technology	3	B

Teaching languages

English

Keywords

Offshore structures

Position of the course

The goal of the course is allowing students to gain insight in all relevant engineering aspects of offshore techniques construction.

Contents

- Overview of offshore construction.
- Gravity structures, jacket construction, monopiles, ...
- Hydraulic forces (waves and currents) on offshore structures with clear distinction between singular structures (e.g. monopiles) and jacket structures.
- Offshore wind energy
- Ocean energy, mainly tidal- and wave energy (only for the version of 4 ECTS)
- Financial viability of offshore installations (only for the version of 4 ECTS)

Initial competences

Coastal engineering and Harbour construction, Geotechnics, Hydraulics

Final competences

1 CONCEPTS: design of offshore structures; wave forces on piles; scour; offshore wind energy; renewable energy
2 INSIGHTS: distinction between breaking and non-breaking waves w.r.t. wave loading on piles; insight in potential and problems related to offshore constructions; renewable energies
3 SKILLS: design of offshore structures

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

Group work, Seminar, Lecture

Study material

Type: Slides

Name: Lectures (PDF)
Indicative price: Free or paid by faculty
Optional: no
Language : English
Number of Slides : 500
Available on Ufora : Yes
Online Available : Yes
Available in the Library : No
Available through Student Association : No

References

- Boyle, G. (2004): Renewable Energy - Power for a sustainable future. Oxford, U. K.: Oxford University Press, 2nd edition, 452 p.
- EWEA (2013): Deep water - The next step for offshore wind energy. The European Wind Energy Association, 50 p.
- Journée, J.M.J.; Massie, W.W. (2001): Offshore hydromechanics. Delft University of Technology, 530 p.
- Kortenhaus, A.; Vanneste, D. (2013): Wave forces on slender cylindrical piles. Department of Civil Engineering, Lecture Notes for 'Offshore Structures', Ghent, Belgium, 26 p.
- Lykke Andersen, T.; Frigaard, P. (2007): Lecture notes for the course in 'Water wave mechanics'. Department of Civil Engineering, DCE Lecture Notes No. 16, Aalborg, Denmark, 111 p.
- Rabaut, D. (2013): Strucural design of offshore steel structures: self-elevating units. DEME Dredging, Environmental & Marine Engineering, Lecture Notes, Offshore Structures, Ghent University, Version 1.02, 47 p.
- Van der Tempel, J. (2006): Design of support structures for offshore wind turbines. Ph.D. thesis, *Delft University of Technology*, Delft, The Netherlands, 194 p.
- Vannuci, D. (2011): ORECCA project: Technologies - state of the art. 120 p.

Course content-related study coaching

The teaching staff is available to the students before and after the scheduled courses and via email.

Assessment moments

end-of-term and continuous assessment

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

Oral assessment open-book

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

Oral assessment open-book

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

Periodic evaluation (during examination period): oral open-book exam, written preparation.
Non-periodic evaluation (before examination period): evaluation of report on project assignments. Students submit the report before the start of the periodic evaluations, according to the terms announced during the lectures and via the electronic learning platform.
If not submitted the report in time, without a valid and timely communicated

reason for it, then the student will receive a 0 for the non-periodical evaluation.
For the non-periodic evaluation, a second chance is only possible in modified form, if less than 10 in 20 was achieved.

Calculation of the examination mark

The periodic evaluation (oral exam) counts for 60% of the total, the non-periodic evaluation (project work) counts for 40% of the total.
If for one of both evaluations (exam or project work) less than 10 (in 20) is scored, then this part is counted for 70% and the other part for 30%.