GHENT UNIVERSITY

Study Programme

Academic year 2025-2026

Programme jointly offered by Ghent University,University of Rostock,“Dunarea de Jos” University of Galati,École centrale de Nantes,Polytechnical University of Madrid,University of Liège,University of Lisboa

International Master of Science in Advanced Design of Sustainable Ships and Offshore Structures

Language of instruction: English

Programme version 1

1 General Courses — 60 credits

The student takes the general courses at one of the universities mentioned below, in accordance with the mobility scheme as approved by the Steering Committee.
The first year is offered by Universiteit Gent (Belgium) and Dunarea de Jos University of Galati (UDJG, Roemenië).
More information: https://www.emship.eu

1.1 General Courses Ghent University — 60 credits

The first master's year at Ghent University, in accordance with the mobility scheme as approved by the Steering Committee:
- 54 ECTS general courses
- 6 ECTS elective courses

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E044311	Structural Stability *Robby Caspeele -- Department of Structural Engineering and Building Materials*	3		1	C:1	90
2	E045280	Computational Fluid Dynamics *Joris Degroote -- Department of Electromechanical, Systems and Metal Engineering*	3		1	A:1	90
3	E900069	Composites *Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering*	6		1	A:1	180
4	E055020	Marine Hydrostatics and Stability *Evert Lataire -- Department of Civil Engineering*	6		1	A:1	180
5	E055060	Ship Manoeuvring and Seakeeping Behaviour of Floating Structures *Guillaume Delefortrie -- Department of Civil Engineering*	6		1	A:1	180
6	E056600	Construction Techniques *Wim De Waele -- Department of Electromechanical, Systems and Metal Engineering*	3		1	B:2	90
7	E040670	Mechanical Vibrations *Mia Loccufier -- Department of Electromechanical, Systems and Metal Engineering*	6		1	B:2	180
8	E044666	Offshore Structures *Andreas Kortenhaus -- Department of Civil Engineering*	3		1	B:2	90
9	E055070	Ship and Marine Structures *Philippe Rigo -- Department of Civil Engineering*	6		1	A:2	180
10	E055080	Ship Resistance and Propulsion *Guillaume Delefortrie -- Department of Civil Engineering*	6		1	A:2	180
11	E055090	Ship Design Project *Guillaume Delefortrie -- Department of Civil Engineering*	6		1	A:J	180

1.1.1 Elective Course Ghent University — 6 credits

Subscribe to 6 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6		1	A:1	180
2	E076951	Engineering Economy *Sofie Verbrugge -- Department of Information Technology*	6		1	A:1	180

3	E076820	Project Management *Mario Vanhoucke -- Department of Business Informatics and Operations Management*	6		1	A:2	180
4	E076431	Introduction to Entrepreneurship	3		1	A:1	90
5	F000892	Innovation Management *Katrien Verleye -- Department of Marketing, Innovation and Organisation*	3		1	A:2	90

1.2 General Courses “Dunarea de Jos” University of Galati 60 credits

The first master's year at Dunarea de Jos University of Galati (UDJG, Roemenië), in accordance with the mobility scheme as approved by the Steering Committee:
- 44 ECTS general courses
- 12 ECTS general courses according to background in naval architecture
- 4 ECTS elective courses

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900844	Ship Structural Analysis and Design *“Dunarea de Jos” University of Galati*	5		1	A:1	150
2	E900845	Computational Fluid Dynamics I *“Dunarea de Jos” University of Galati*	4		1	A:1	120
3	E900846	Advanced Shipbuilding Technology *“Dunarea de Jos” University of Galati*	4		1		120
4	E900847	Analysis of Noise and Vibration *“Dunarea de Jos” University of Galati*	5		1	A:1	150
5	E900822	Complements in Propulsion Dynamics *“Dunarea de Jos” University of Galati*	5		1	A:2	150
6	E900823	Offshore Units and Systems *“Dunarea de Jos” University of Galati*	5		1	A:2	150
7	E900824	Structural Analysis and Hydroelasticity *“Dunarea de Jos” University of Galati*	5		1	A:2	150
8	E900826	Computational Fluid Dynamics II *“Dunarea de Jos” University of Galati*	4		1	A:2	120
9	E900825	Ship Design Project II *“Dunarea de Jos” University of Galati*	7		1	A:2	210

1.2.1 General Courses Naval Architecture “Dunarea de Jos” University of Galati 12 credits

Subscribe to 12 credit units from the following list. Subject to approval by the faculty.
- Students with a background in naval architecture take the courses with reference a.
- Students without a background in naval architecture take the courses with reference b.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900849	Composite Structure in Naval Architecture *“Dunarea de Jos” University of Galati*	5	a	1	A:1	150
2	E900848	Ship Design Project I *“Dunarea de Jos” University of Galati*	7	a	1	A:1	210
3	E900850	Seakeeping *“Dunarea de Jos” University of Galati*	5	b	1	A:1	150
4	E900851	Ship Hydrostatics and Stability *“Dunarea de Jos” University of Galati*	4	b	1	A:1	120
5	E900852	Ship Resistance *“Dunarea de Jos” University of Galati*	3	b	1	A:1	90

1.2.2 Elective Courses “Dunarea de Jos” University of Galati 4 credits

Subscribe to 4 credit units from the following list. Subject to approval by the faculty.
- Students with a background in naval architecture choose a course with reference a.
- Students without a background in naval architecture take the course with reference b.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900828	Project Management *“Dunarea de Jos” University of Galati*	4	a	1	A:2	120
2	E900829	The Marine Environmental Protection Technologies *“Dunarea de Jos” University of Galati*	4	a	1	A:2	120
3	E900830	Ship Commissioning *“Dunarea de Jos” University of Galati*	4	a	1	A:2	120
4	E900827	Ship Manoeuvring *“Dunarea de Jos” University of Galati*	4	b	1	A:2	120

2 General Courses 30 credits

The student takes 30 ECTS in the second master's year at one of the universities mentioned below, in accordance with the mobility scheme as approved by the Steering Committee.
The second year is offered by University of Liège (ULiège, Belgium), Ecole Centrale de Nantes (ECN, France), University of Rostock (URO, Germany), Universidad Politécnica de Madrid (UPM, Spain) and Instituto Superior Técnico (IST, Portugal).
More information: https://www.emship.eu

2.1 General Courses Universidad Politécnica de Madrid 30 credits

The courses in the second master's year at Universidad Politécnica de Madrid (UPM, Spain) focus on Offshore Wind and Renewable Marine Energy.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900801	Oceanology *Universidad Politecnica de Madrid*	1.5		2	A:1	45
2	E900802	Structural Design *Universidad Politecnica de Madrid*	8		2	A:1	240
3	E900803	Electric Generation and Export Technologies *Universidad Politecnica de Madrid*	5.5		2	A:1	165
4	E900804	Manufacturing and Marine Operations *Universidad Politecnica de Madrid*	7		2	A:1	210
5	E900805	Project Operation and Management *Universidad Politecnica de Madrid*	4		2	A:1	120
6	E900806	Structural Analysis of Offshore Platforms *Universidad Politecnica de Madrid*	4		2	A:1	120

2.2 General Courses University of Rostock 30 credits

The courses in the second master's year at University of Rostock (URO, Germany) focus on Ship Technology and Ocean Engineering.
Students take:
- 6 ECTS general courses
- 24 ECTS elective courses

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900814	Team Project *University of Rostock*	6		2	A:1	180

2.2.1 Elective Courses University of Rostock 24 credits

Subscribe to 24 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900807	Design of Offshore Systems *University of Rostock*	6		2	A:1	180
2	E900808	Selected Topics for the Analysis of Marine Structures *University of Rostock*	6		2	A:1	180
3	E900809	Mathematical Models in Ship Theory *University of Rostock*	6		2	A:1	180
4	E900810	Ship Life Cycle Digitalization *University of Rostock*	6		2	A:1	180
5	E900811	Safety of Maritime Systems *University of Rostock*	6		2	A:1	180
6	E900812	Ocean Research Technologies *University of Rostock*	6		2	A:1	180
7	E900813	Large Engines, Energy Converters and Fuels for Climate Neutral Marine Applications *University of Rostock*	6		2	A:1	180

2.3 General Courses Ecole Centrale de Nantes 30 credits

The courses in the second master's year at Ecole Centrale de Nantes (ECN, France) focus on Hydrodynamics for Ocean Engineering.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900815	General Concepts of Hydrodynamics *École centrale de Nantes*	4		2	A:1	120
2	E900816	Water Waves and Sea State Modelling *École centrale de Nantes*	4		2	A:1	120
3	E900817	Wave-Structure Interactions and Moorings *École centrale de Nantes*	5		2	A:1	150

4	E900818	Numerical Hydrodynamics *École centrale de Nantes*	5	2	A:1	150
5	E900819	Experimental Hydrodynamics *École centrale de Nantes*	5	2	A:1	150
6	E900820	Naval Engineering *École centrale de Nantes*	5	2	A:1	150
7	E900821	Modern Languages *École centrale de Nantes*	2	2	A:1	60

2.4 General Courses University of Liège 30 credits

The courses in the second master's year at University of Liège (ULiège, Belgium) focus on Offshore Structures and Digital Twin.
Students take:
- 15 ECTS general courses
- 15 ECTS elective courses

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900831	Technology of Offshore Wind Structures *Université de Liège*	5		2	A:1	150
2	E900832	Structural Health Monitoring for Offshore Structures *Université de Liège*	5		2	A:1	150
3	E900833	Digital Twins and Operations of Marine Structures *Université de Liège*	5		2	A:1	150

2.4.1 Elective Courses University of Liège 15 credits

Subscribe to 15 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900834	Reliability and Stochastic Modelling *Université de Liège*	5		2	A:1	150
2	E900835	Structural and Multi-Disciplinary Optimization *Université de Liège*	5		2	A:1	150
3	E900836	Mechanics of Composites (of Marine Structures) *Université de Liège*	5		2	A:1	150
4	E900837	Fracture Mechanics, Damage and Fatigue *Université de Liège*	5		2	A:1	150
5	E900838	Vibration Testing and Experimental Modal Analysis *Université de Liège*	5		2	A:1	150

2.5 General Courses Instituto Superior Técnico 30 credits

The courses in the second master's year at Instituo Superio Técnico (IST, Portugal) focus on Safety and Logistics of Maritime Transportation.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900839	Ports Organization and Management *Instituto Superior Técnico*	6		2	A:1	180
2	E900840	Ship and Ocean Systems Design *Instituto Superior Técnico*	6		2	A:1	180
3	E900841	Maritime Transportation and Ports *Instituto Superior Técnico*	6		2	A:1	180
4	E900842	Modelling and Safety of Maritime Traffic *Instituto Superior Técnico*	6		2	A:1	180
5	E900843	Integrated Project in Naval Architecture and Ocean Engineering *Instituto Superior Técnico*	6		2	A:1	180

3 Master's Dissertation 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E091105	Master's Dissertation	30		2	A:J	900

Teaching

When a course is not taught (solely) in the programme's language of instruction, the effectively used languages are indicated in square brackets following the cours name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Kroatian/Serbian	zh: Chinese
cs: Czech	el: Greek	fr: French	nl: Dutch	pt: Portuguese	sl: Slovene	
da: Danish	en: English	it: Italian	no: Norwegian	ru: Russian	sv: Swedish	

Semester

Semesters are indicated by their number (1 or 2); semester 3 represents the summer period and J indicates a course spanning semesters 1 and 2.
When a capital letter precedes a semester number, the course has multiple offerings. The letter indicates the offering concerned.
When a semester is shown in brackets, the course in not offered this year in the specific offering.
The offering frequency and first year of offering are indicated by the following codes:

a: bi-annually	c: annually, from 2026-2027	f: annually, from 2027-2028	i: annually, from 2028-2029
b: tri-annually	d: bi-annually, from 2026-2027	g: bi-annually, from 2027-2028	j: bi-annually, from 2028-2029
	e: tri-annually, from 2026-2027	h: tri-annually, from 2027-2028	k: tri-annually, from 2028-2029