

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 2

## 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 <i>Robby Caspeele -- Department of Structural Engineering and Building Materials</i>	3		1	C:1	90
2	E045280 Computational Fluid Dynamics <i>Joris Degroote -- Department of Electromechanical, Systems and Metal Engineering</i>	3		1	A:1	90
3	E900069 Composites <i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	A:1	180
4	E055020 Marine Hydrostatics and Stability <i>Evert Lataire -- Department of Civil Engineering</i>	6		1	A:1	180
5	E055060 Ship Manoeuvring and Seakeeping Behaviour of Floating Structures <i>Guillaume Delefortrie -- Department of Civil Engineering</i>	6		1	A:1	180
6	E056600 Construction Techniques <i>Wim De Waele -- Department of Electromechanical, Systems and Metal Engineering</i>	3		1	B:2	90
7	E048600 Vibrations and Signals <i>Mia Loccufer -- Department of Electromechanical, Systems and Metal Engineering</i>	6		1	A:2	180
8	E044666 Offshore Structures <i>Andreas Kortenhaus -- Department of Civil Engineering</i>	3		1	B:2	90
9	E055070 Ship and Marine Structures <i>Philippe Rigo -- Department of Civil Engineering</i>	6		1	A:2	180
10	E055080 Ship Resistance and Propulsion <i>Guillaume Delefortrie -- Department of Civil Engineering</i>	6		1	A:2	180
11	E055090 Ship Design Project <i>Guillaume Delefortrie -- Department of Civil Engineering</i>	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 <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:1	180
2	E076951 Engineering Economy <i>Sofie Verbrugge -- Department of Information Technology</i>	6		1	A:1	180

3	E076820	Project Management <i>Mario Vanhoucke -- Department of Business Informatics and Operations Management</i>	6	1	A:2	180
4	F001020	Introduction to Entrepreneurship <i>Petra Andries -- Department of Marketing, Innovation and Organisation</i>	3	1	A:1	90
5	F000892	Innovation Management <i>Katrien Verleye -- Department of Marketing, Innovation and Organisation</i>	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	E900855 Ship Design and Structural Analysis <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5		1	A:1	150
2	E900845 Computational Fluid Dynamics I <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4		1	A:1	120
3	E900861 Analysis of Noise and Vibration <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4		1	A:1	120
4	E900860 Advanced Shipbuilding Technology <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5		1	A:2	150
5	E900822 Complements in Propulsion Dynamics <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5		1	A:2	150
6	E900823 Offshore Units and Systems <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5		1	A:2	150
7	E900824 Structural Analysis and Hydroelasticity <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5		1	A:2	150
8	E900826 Computational Fluid Dynamics II <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4		1	A:2	120
9	E900859 Research and Design Internship 2 (Project) <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	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	E900854 Unconventional Materials <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5	a	1	A:1	150
2	E900857 Research and Design Internship 1 (Project) <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	7	a	1	A:1	210
3	E900853 Ship Dynamics 1 <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5	b	1	A:1	150
4	E900851 Ship Hydrostatics and Stability <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4	b	1	A:1	120
5	E900852 Ship Resistance <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	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 <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4	a	1	A:2	120
2	E900829 The Marine Environmental Protection Technologies <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4	a	1	A:2	120
3	E900856 Commissioning <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	5	a	1	A:2	150
4	E900858 Ship Dynamics 2 (Manoeuvring) <i>External Lecturer -- “Dunarea de Jos” University of Galati</i>	4	b	1	A:2	120

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 <i>External Lecturer -- Polytechnical University of Madrid</i>	1.5		2	A:1	45
2	E900802 Structural Design <i>External Lecturer -- Polytechnical University of Madrid</i>	8		2	A:1	240
3	E900803 Electric Generation and Export Technologies <i>External Lecturer -- Polytechnical University of Madrid</i>	5.5		2	A:1	165
4	E900804 Manufacturing and Marine Operations <i>External Lecturer -- Polytechnical University of Madrid</i>	7		2	A:1	210
5	E900805 Project Operation and Management <i>External Lecturer -- Polytechnical University of Madrid</i>	4		2	A:1	120
6	E900806 Structural Analysis of Offshore Platforms <i>External Lecturer -- Polytechnical University of Madrid</i>	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 <i>External Lecturer -- University of Rostock</i>	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 <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
2	E900808 Selected Topics for the Analysis of Marine Structures <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
3	E900809 Mathematical Models in Ship Theory <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
4	E900810 Ship Life Cycle Digitalization <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
5	E900811 Safety of Maritime Systems <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
6	E900812 Ocean Research Technologies <i>External Lecturer -- University of Rostock</i>	6		2	A:1	180
7	E900813 Large Engines, Energy Converters and Fuels for Climate Neutral Marine Applications <i>External Lecturer -- University of Rostock</i>	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 <i>External Lecturer -- École centrale de Nantes</i>	4		2	A:1	120
2	E900816 Water Waves and Sea State Modelling <i>External Lecturer -- École centrale de Nantes</i>	4		2	A:1	120
3	E900817 Wave-Structure Interactions and Moorings <i>External Lecturer -- École centrale de Nantes</i>	5		2	A:1	150

4	E900818	Numerical Hydrodynamics <i>External Lecturer -- École centrale de Nantes</i>	5	2	A:1	150
5	E900819	Experimental Hydrodynamics <i>External Lecturer -- École centrale de Nantes</i>	5	2	A:1	150
6	E900820	Naval Engineering <i>External Lecturer -- École centrale de Nantes</i>	5	2	A:1	150
7	E900821	Modern Languages <i>External Lecturer -- École centrale de Nantes</i>	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 Wind Structures and Numerical Simulation.

Students take:

- 15 ECTS general courses
- 15 ECTS elective courses

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E900831 Technology of Offshore Wind Structures <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
2	E900832 Structural Health Monitoring for Offshore Structures <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
3	E900833 Fluid Structure Interactions of offshore environment <i>External Lecturer -- University of Liège</i>	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 <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
2	E900835 Structural and Multi-Disciplinary Optimization <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
3	E900836 Mechanics of Composites <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
4	E900837 Fracture Mechanics, Damage and Fatigue <i>External Lecturer -- University of Liège</i>	5		2	A:1	150
5	E900838 Vibration Testing and Experimental Modal Analysis <i>External Lecturer -- University of Liège</i>	5		2	A:1	150

## 2.5 General Courses Instituto Superior Técnico

30 credits

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

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E900839 Ports Organization and Management <i>External Lecturer -- Instituto Superior Técnico</i>	6		2	A:1	180
2	E900840 Ship and Ocean Systems Design <i>External Lecturer -- Instituto Superior Técnico</i>	6		2	A:1	180
3	E900841 Maritime Transportation and Ports <i>External Lecturer -- Instituto Superior Técnico</i>	6		2	A:1	180
4	E900842 Modelling and Safety of Maritime Traffic <i>External Lecturer -- Instituto Superior Técnico</i>	6		2	A:1	180
5	E900843 Integrated Project in Naval Architecture and Ocean Engineering <i>External Lecturer -- Instituto Superior Técnico</i>	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 course name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/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 is 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