Universität Rostock Traditio et Innovatio

SUSTAINABLE MARITIME ENGINEERING

International Master's Programme in

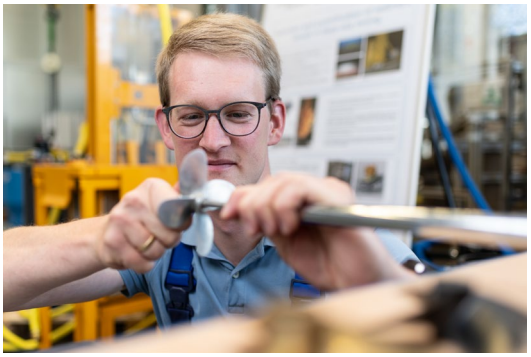
SUSTAINABLE MARITIME ENGINEERING

A brief guide for course organisation

A course with a built-in future. By the sea. In a city worth living.
Welcome to Rostock, where you can shape the future of maritime technology.






03/09/2026

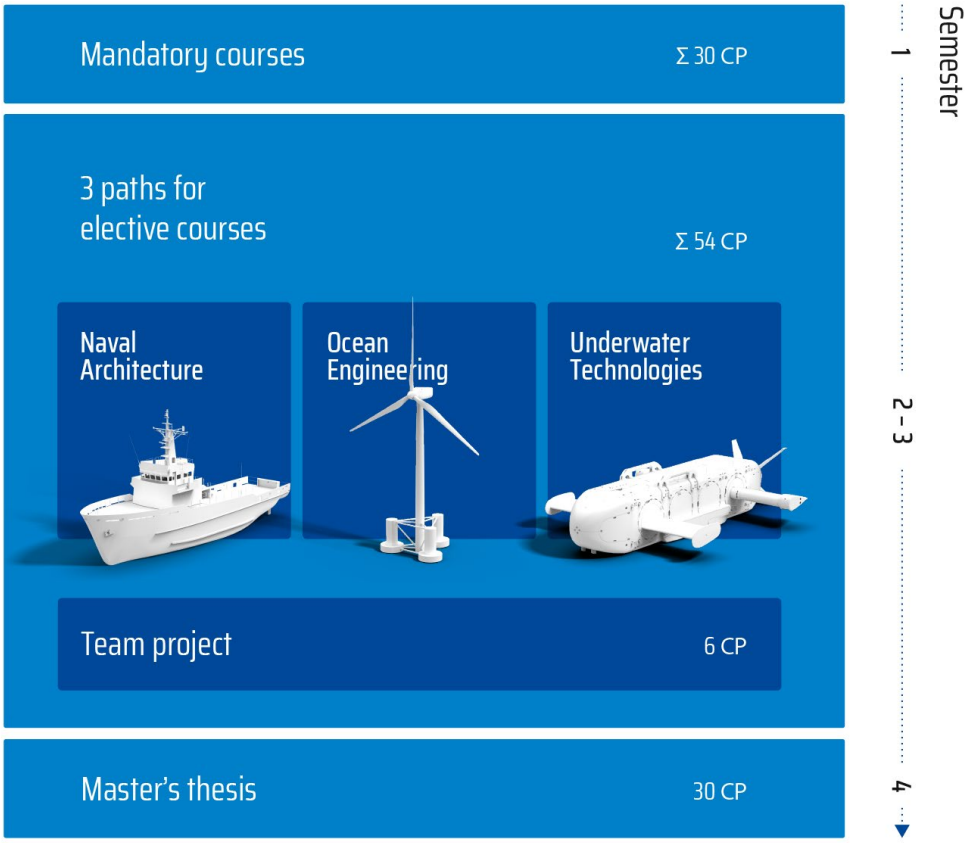
1. Course catalogue for the master programme Sustainable Maritime Engineering

Mandatory courses (54 CP)	CP
Design of Offshore Systems	6
Principle Analysis of Marine Structures	6
Principles of Marine Fluid Mechanics	6
Safety of Maritime Systems	6
Ship Design	6
Team Project	6
Master's Thesis	30
Elective courses – SME (min. 36 CP)	**CP**
Advanced Analysis of Marine Structures	6
Advanced Analysis of Offshore Systems	6
CFD in Maritime Engineering	6
Coding of Finite Elements	6
Composite Materials Design	6
Continuum Mechanics	6
Deep-Sea Technology and Practical Applications of Underwater Technology	6
Design of Offshore Aquaculture Systems	6
Design of Underwater Systems	6
Experimental Methods in Maritime Engineering	6
Large Engines, Energy Converters and Fuels for Climate Neutral Marine Applications	6
Modelling and Simulation of Turbulent Flows	6
Navigation, Control and Vehicle Autonomy of Maritime Systems	6
Ocean Renewable Energies	6
Ocean Research Technologies	6
Ocean Waves	6
Resistance and Propulsion	6
Sailing Theory	6
Seakeeping and Manoeuvring	6
Selected Topics for the Analysis of Marine Structures	6
Ship Life Cycle Digitalization	6
Structural Design of Marine Structures	6
Technical Production Processes of Maritime Structures and Ships	6
Ultimate Strength Assessment of Marine Structures	6
Elective courses – technical (min. 12 CP)	**CP**
Application of Machine Learning Methods to Practical Problems of Ship Hydromechanics	6
Deep Learning	6
Dynamics of Multibody Systems	6
Finite Element Analysis of Composite Structures	6
Introduction to Data Science in Materials Science and Engineering	6
Maritime Graphics	6
Metallic Engineering Materials	6
Numerical and Experimental Hydroacoustics	6
Numerical Fluid Mechanics and Turbulent Flows	6
Offshore Wind Energy	6
Principles of Energy Technology Systems & Applications in the Maritime Context	6
Robust Control and State Estimation	6
Strength-optimization and Fracture-safe Design	6
Structural Durability	6
Technical Fluids for Sustainable Maritime Applications	6
Elective courses – non-technical (min. 6 CP)	**CP**
Essentials of Ocean Science and Sustainable Ocean Use	6
German A1.1 CEFR	6
German A1.2 CEFR	6
Professional English for Engineering C1.1 CEFR	6
Professional English for Engineering C1.2 CEFR	6
Reasoning under Uncertainty	6

2. Recommended elective course selection for specialisation paths

Important notice: The following course selection scenarios are recommendations based on the experience of the teaching staff of the programme. Apart from the mandatory courses, students are generally free to combine elective courses within the following minimum requirements per category:

- at least 36 CP have to be taken in SME electives
- at least 12 CP have to be taken in technical electives
- at least 6 CP have to be taken in non-technical electives



2.1 Naval Architecture



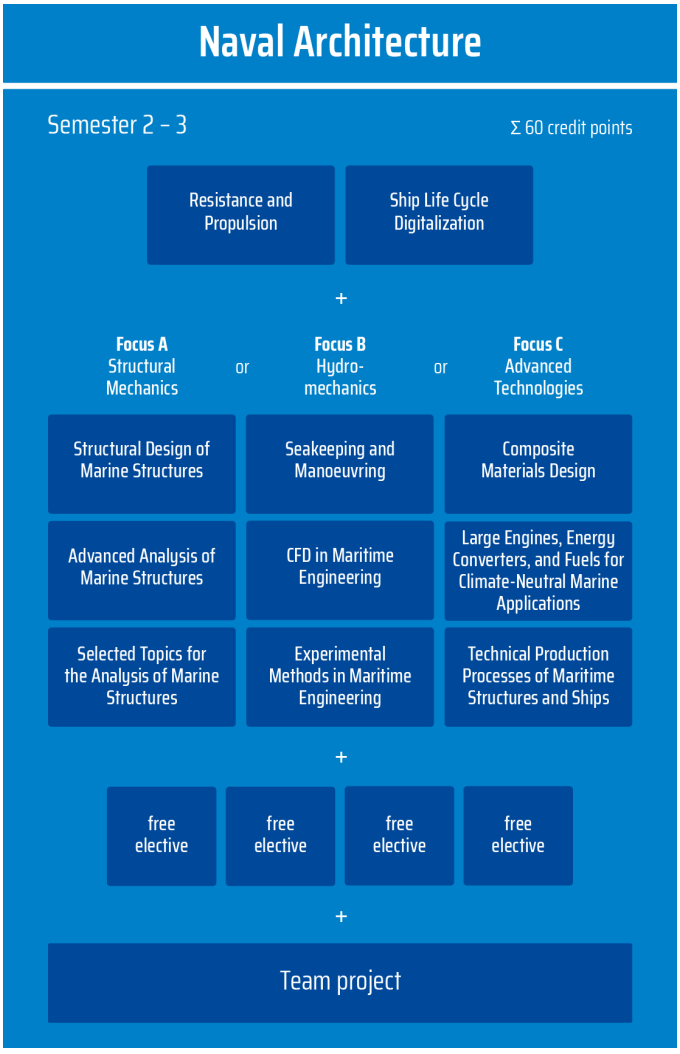
With a specialisation in Naval Architecture, graduates are ideally equipped for all activities related to ship technology and in particular the challenges surrounding the topic of green shipping. Potential employers include shipyards, shipowners, engineering offices, suppliers, service providers, research and testing facilities (such as towing tanks) and classification societies.

In addition to two central compulsory elective modules of overarching importance (*Resistance and Propulsion* and *Ship Life Cycle Digitalization*), three courses for further specialisation in the subject areas of Structural Mechanics, Hydromechanics and Advanced Technologies are recommended.

Example: When a student wants to specialise in the hydromechanics aspects of naval architecture, we recommend to select the following elective modules (30 CP in total):

- Resistance and Propulsion (6 CP)
- Ship Life Cycle Digitalization (6 CP)
- Seakeeping and Manoeuvring (6 CP)
- CFD in Maritime Engineering (6 CP)
- Experimental Methods in Maritime Engineering (6 CP)

Including the 66 CP for the mandatory modules, 96 CP are taken when a student takes this path, leaving room to freely select additional modules for 24 CP. Of these, at least 6 additional CP have to be selected from SME electives, at least 12 CP from technical electives and at least 6 CP from non-technical electives.



2.2 Ocean Engineering

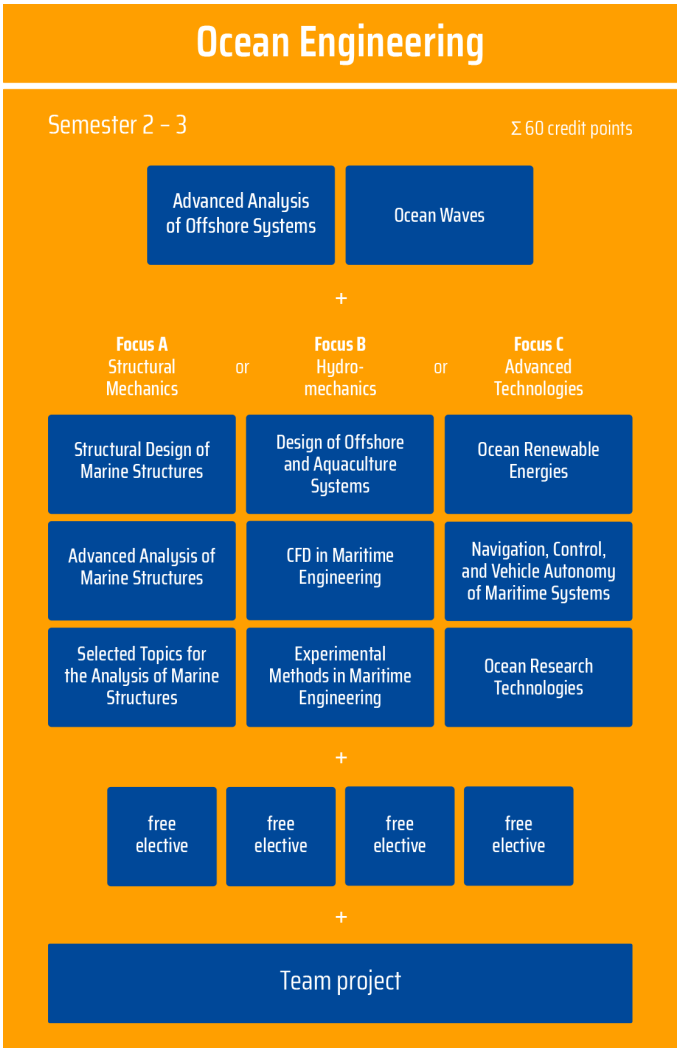


With a specialisation in Ocean Engineering, graduates are sought-after specialists in the field of offshore infrastructures, in particular for the utilisation of renewable energies from the sea. There are excellent prospects of getting a job at shipyards, engineering offices, energy companies, suppliers, research and testing facilities and classification societies.
In addition to two central compulsory elective modules of overarching importance (*Advanced Analysis of Offshore Systems* and *Ocean Waves*), three courses for further specialisation in the subject areas of Structural Mechanics, Hydromechanics and Advanced Technologies are recommended.

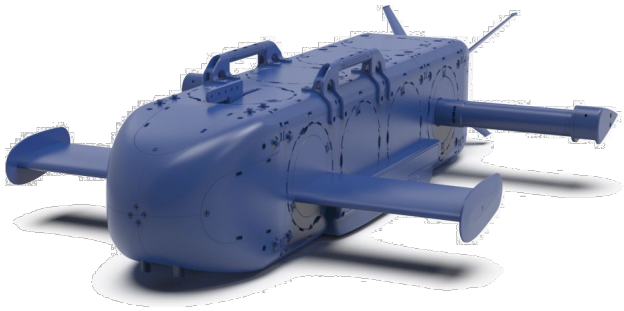
Example: When a student wants to specialise in the structure mechanical aspects of ocean engineering architecture, we recommend to select the following elective modules (30 CP in total):

- Advanced Analysis of Offshore Systems (6 CP)
- Ocean Waves (6 CP)
- Structural Design of Marine Structures (6 CP)
- Advanced Analysis of Marine Structures (6 CP)
- Selected Topics for the Analysis of Marine Structures (6 CP)

Including the 66 CP for the mandatory modules, 96 CP are taken when a student takes this path, leaving room to freely select additional modules for 24 CP. Of these, at least 6 additional CP have to be selected from SME electives, at least 12 CP from technical electives and at least 6 CP from non-technical electives.



2.3 Underwater Technologies



With a specialisation in Underwater Technologies, graduates are graduates are excellently prepared for exciting tasks in the field of marine research technologies and underwater vehicles. Potential employers include research institutions, engineering offices, suppliers and service providers.
In addition to two central compulsory elective modules of overarching importance (*Design of Underwater Systems* and *Navigation, Control and Vehicle Autonomy of Maritime Systems*), three courses for further specialisation in the subject areas of Design and Operations are recommended.

Example: When a student wants to specialise in the operations of underwater technologies, we recommend to select the following elective modules (30 CP in total):

- Design of Underwater Systems (6 CP)
- Navigation, Control and Vehicle Autonomy of Maritime Systems (6 CP)
- Deep-Sea Technology and Practical Applications of UW Technology (6 CP)
- CFD in Maritime Engineering (6 CP)
- Ocean Research Technologies (6 CP)

Including the 66 CP for the mandatory modules, 96 CP are taken when a student takes this path, leaving room to freely select additional modules for 24 CP. Of these, at least 6 additional CP have to be selected from SME electives, at least 12 CP from technical electives and at least 6 CP from non-technical electives.



3. Further information

For further information please consult the programme websites
www.sme-germany.com/
or contact the programme coordinator Prof Florian Sprenger
florian.sprenger@sme-germany.com