

Marine Technology Science

MSc Programme



The marine environment provides ample opportunity for innovative solutions of the future's major challenges – population increase, transportation, renewable energy. Winds and waves and the saline environment itself, on the other hand, pose major risks to anything we send out to sea. The Marine Technology Science track considers these opportunities and risks and prepares students for generating the science required for assessing the hydrodynamical loads and the structures designed to survive the loads.

Degree	Master of Science in Marine Technology
Starts	September
Credits	120 ECTS, 24 months
Language	English
Application deadline	April 1st: international students July 1st: Dutch degree
Tuition fee	€ 18.750 (non EU) € 2.083 (EU)
Scholarships	scholarships.tudelft.nl

Programme

The Master's programme Marine Technology offers two tracks: Science (MT Sc) and Design, Production and Operation (MT DPO).

In the Science track, the aim is to develop knowledge, skills, and tools to aid in the analysis and design of ships and offshore structures, as well as new concepts for ships and other floating structures and to apply new construction materials. Students receive in-depth knowledge of the fundamentals of hydrodynamics and structural materials, and the skills required to apply them. Marine structures of the future generally cannot be based on past experience and existing concepts alone. Students in the Science track necessarily resort to first principles for their innovations.

The bulk of the Science track is taken up with the study of mathematics, advanced hydrodynamics, properties of new materials, advanced methods of structural analysis and advanced ship concepts. During their education, students also address a number of social and environmental subjects. They develop skills in solving multidisciplinary problems through systematic thinking, analysis and synthesis, and they learn to work in multidisciplinary teams as well as independently.

Focus areas

Within the Science track, you can graduate within two different research groups, consisting of several faculty members with each their own specialism. The research group of Ship Hydro-

First Year	Second Year
25 ECTS	15 ECTS
Motions & Loading of Structures in Waves	Electives
Structural Design and Analysis	15 ECTS
Design of Complex Specials	Literature
Mechatronics in MT	30 ECTS
Maritime Finance, Business and Law	Master Thesis
Ethics	
Student Colloquia (0 ECTS)	
15 ECTS	
Numerical Ship Hydromechanics	
Fluid-Structure Interaction in Marine Structures	
Advanced Fluid Dynamics	
20 ECTS	
Specialisation Courses	

mechanics focuses on ship motion behaviour in waves, where safety and operability are key words, and resistance and propulsion, where the focus is on sustainable ship propulsion. Ship Structures focuses on considerations of structure and strength in ships and offshore structures. The combined effort of Ship Hydromechanics (hydromechanics loads) and Ship Structures in the form of Fluid-Structure Interaction is becoming ever more necessary and requires the generation of new knowledge and skills.

• **Research group Ship Hydromechanics**

This research group is concerned with ship motion behaviour in waves (seakeeping) and manoeuvring. An example of very successful research in this field at TU Delft is the 'Axe Bow concept', a revolutionary bow shape for highly increased operability of fast ships. A second field of research within this track is resistance and propulsion, an example of which is air lubrication to reduce resistance. Courses cover topics such as sound production of propellers and wave slamming on marine structures.

• **Research group Ship and Offshore Structures**

This research group focuses on structural aspects of ships and offshore units, and treats topics as structural strength, fatigue life, vibrations and the ability to apply these concepts in innovative designs. Recently, the hexapod

became operational, a unique experimental facility for testing structural members for new combinations of loading conditions.

Graduation projects

- Multi-Axial Fatigue Analysis in an FPSO Bilge Keel
- Drifting-Ice Structure interaction, a dynamic systems approach
- Ocean Waves Reanalysis of Operational Based Method
- Developing a Prediction Method for the Underwater Acoustic signature of Steel Surface Vessels
- Motion Analysis of a Semi-Submersible Crane Vessel at Inconvenient Draft

Career prospects

With the offshore industry booming, job prospects for graduates with shipyards such as Damen and IHC Merwede, as well the Dutch Ministry of Defence are excellent. Also work for contractors like SBM, Bluewater, Heerema and Allseas is an often-chosen career path. MT graduates find outstanding opportunities with firms in many other fields as well, including (heavy) cargo transport and salvage firms, engineering companies, research institutes, banks and classifications societies. Many others continue at TU Delft with studies leading to a PhD, or pursue a PhD while working in industry.



5th

Marine/Ocean Engineering programme in ARWU ranking



30%

international students

Career perspective



85%

has a job immediately after graduation



95%

within 3 months



100%

within 6 months



95%

works within the industry