Develop your Knowledge and Skils to solve Tomorrow’s Problems of the Maritime Industry

In the past, there was not a job more hazardous than to sail the seas. These days, we take it for granted that cargo ships can safely navigate the oceans – largely because of technological advances in marine technology. These same technologies make it possible to extract oil from the seabed and load it on to a tanker in high winds and heavy seas.

If you are intrigued by the technologies that allow for the construction of highly complex modern ships, the exploitation of mineral wealth on the seabed, and other achievements of marine technology, TU Delft’s unique master’s programme may be just the programme for you.

TU Delft’s MSc Programme in Marine Technology (MT) – the only one of its kind offered in the Netherlands – gives future engineers the knowledge and skills they need to handle the entire process of design, construction, production and operation of these ships and marine systems.

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 an in-depth knowledge of and skills in applying the fundamentals of hydrodynamics and structural materials. This is necessary as such work generally cannot be based on past experience and existing concepts alone. Key words in this respect are design based on the application of knowledge and skills with respect to first principles. Moreover, students will consider the various social and environmental impacts associated with marine technology applications.

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.
Curriculum Marine Technology Science

The master is divided in three parts; 40 ECTS are obligatory, 35 ECTS are available for electives and 45 ECTS are reserved for your master thesis project (9 months)

First Year

<table>
<thead>
<tr>
<th>25 ECTS</th>
<th>Motions &amp; Loadings of Structures in Waves</th>
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<tbody>
<tr>
<td></td>
<td>Structural Design and Analysis</td>
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<td>Design of Complex Specials</td>
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<td>Mechatronics in MT</td>
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<td>Maritime Finance, Business and Law</td>
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<td>Student Colloquia (0 ECTS)</td>
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<tr>
<td>15 ECTS</td>
<td>Advanced course in Ship Hydromechanics</td>
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<td>Fluid - Structure Interaction in Marine Structures</td>
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<td>CFD for Aerospace Engineers</td>
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<td></td>
<td>CFD2: discretisation techniques</td>
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<tr>
<td>20 ECTS</td>
<td>Specialisation Course</td>
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Second Year

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<tr>
<th>15 ECTS</th>
<th>Electives</th>
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<tr>
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<td>Research</td>
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<tr>
<td>45 ECTS</td>
<td>Master Thesis</td>
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1 EC = 28 hrs, study, according to the European Credit Transfer System (ECTS).
Total number of credits in the MSc programme = 120 EC

For more information on all courses, please visit: www.studyguide.tudelft.nl

Specialisations

Within the Science track, two specialisations are offered: Ship Hydromechanics and Ship and Offshore Structures. The field of ship hydromechanics 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. Increasingly, the link between Ship Hydromechanics (hydromechanics loads) and Ship Structures receives more attention.

- **Specialisation Ship Hydromechanics**
  - This specialisation is concerned with ship motion behaviour in waves (seakeeping) and manoeuvring. Safety and operability are key words. 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, where the focus is on sustainable ship propulsion. Courses cover topics such as cavitation of propellers and sailing yacht performance.

- **Specialisation Ship and Offshore Structures**
  - This specialisation focuses on the construction of ships and offshore structures, and treats topics as structural strength, fatigue life, vibrations and the ability to design and apply these concepts in innovative designs. Increasingly, Ship Structures also focuses on the link with ship hydromechanics, such as the hydromechanics loads and hydro-elasticity.
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 option. Indeed, 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 on at TU Delft with studies leading to a PhD, or pursue a PhD while working for a company in industry.

My name is Carlo and I started my study in Delft in September 2013, master degree in Marine Technology, track Science with specialization in Ship Hydromechanics. I decided to follow this master programme, because it offers not only many appealing courses related to marine technologies, but also the possibility to take elective courses from other faculties. This means that the student is free to personalize the study plan. That was for me an unique chance to specialize in the hydrodynamic applications for the maritime industry and, at the same time, to broaden my knowledge with courses from other faculties (Aerospace Engineering, Civil Engineering and Mathematics). My choice towards TU Delft was partially motivated by the contents of the master, but not only. Another reason was the reputation of TU Delft as a welcoming university for international students. Indeed, I found that particular care is taken for international students, with a full-time introduction programme and a dedicated office. Therefore, it was simple to feel at ease in the new life. As concerns the city of Delft, I much appreciate the possibility to reach the campus and the city center in few minutes by bike. Despite its mid-sized city center, Delft offers many activities and services: cinemas, restaurants, pubs and shops. In addition, it is well connected to the neighboring cities, so one is always able to enjoy events and nightlife also out of Delft.

The aspects that I like the most about my study are the skills I am acquiring (group working for example), the in-depth scientific contents of the courses, and the personal experience I am gaining at the TU Delft, when getting in touch with motivated students, professors and employees, as well as making good friends in a lively environment. All in all, I am very satisfied with my choice and I would recommend the master Marine Technology at TU Delft to those looking for a stimulating study experience, rich in challenges and opportunities.
Admission requirements and application procedure

Dutch BSc degree
In most cases, if you hold a BSc degree and the Master’s programme is closely related to your Bachelor’s programme, you will be admitted directly into the programme. However, if the Master’s programme does not follow directly from your undergraduate programme, you will be required to take additional courses in what is called a bridging programme. This may be a standard programme, or it may be tailored to your specific situation.

To see which Master’s programmes are open to you on completion of your Bachelor’s degree Dutch university, go to www.doorsstoormatrix.nl. Application goes through Studielink: tudelft.studielink.nl

Dutch HBO degree
An HBO Bachelor’s degree does not qualify you for direct admission to a TU Delft Master’s degree programme. To start a Master’s degree programme, you will first need to complete a supplementary programme in order to bring your knowledge to the required level. You can do this during your HBO programme by completing a bridging or by means of a bridging programme after securing your HBO diploma.

Entrance requirements for mathematics and English (some exceptions) apply for both the bridging minor and the bridging programme. See www.hbodoorstroom.tudelft.nl for detailed information.

Application goes through Studielink: tudelft.studielink.nl

International applicants
To be considered for admission to a MSc Programme you’ll need to meet TU Delft’s general admission requirements.

1. A BSc degree (or a proof that you have nearly completed a BSc programme) in a field closely related to the MSc programme.
2. A BSc Cumulative Grade Point Average (CGPA) of at least 75% of the scale maximum.
3. Proof of English language proficiency:
   - TOEFL (Test of English as a Foreign Language) with a minimum score of 21 for each section and an overall band score of at least 90 (internet-based test). Please note that we only accept the TOEFL internet-based test.
   - or IELTS (academic version) with a minimum score 6.0 for each section and an overall Band score of at least 6.5.
   - or proof that you have passed the University of Cambridge ‘Certificate in Advanced English’ with a minimum grade B or the University of Cambridge ‘Certificate of Proficiency in English’.

For international students, the application period starts in October and closes on 1 April. To start an MSc application, fill in the online application and pay the refundable application fee of €100. Then send hard copies of the application documents to TU Delft’s International Office. Please note that you should apply early when you want to be considered for a scholarship as well!

For more information about the application procedure and studying at TU Delft in general, go to: www.admissions.tudelft.nl.

Society of Marine Technology
In 2012 a new student body has been founded by master students, the Society of Marine Technology. Its mission is stated as follows:

1. Supplying MSc students with insight in opportunities and challenges in operations, engineering and research
2. Increase accessibility of existing knowledge to MSc students
3. Transfer state-of-the-art knowledge from research and industry practice to MSc students
4. Create peer-to-peer network between those in industry, researchers and the MSc students

Please visit the webpage for all details, complete requirements, deadlines and contact information: www.mt.msc.tudelft.nl

Further information for international applicants
International office 3mE
T: See website
E: internationaloffice-3me@tudelft.nl
W: www.studyabroad.3me.tudelft.nl

3mE Faculty
Mekelweg 2
2628 CD Delft
The Netherlands
www.3me.tudelft.nl

Further information
Please visit the webpage for all details, complete requirements, deadlines and contact information:
www.mt.msc.tudelft.nl

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