4.2.12.2 Degree Requirements

Programme Information

The Master of Science (Offshore Technology) programme, or MSc (OT) in short, is jointly hosted by the Department of Civil and Environmental Engineering and the Department of Mechanical Engineering, and is administered by the Department of Civil and Environmental Engineering.

It offers a comprehensive coverage of topics in Offshore Engineering, Subsea Engineering and Petroleum Engineering that are of great relevance to the offshore oil and gas industry which span the design of facilities in shallow waters to challenges that are faced by engineers in developments in deep waters and in arctic conditions, and technologies related to drilling, downhole measurements and characterization in the exploration and production of petroleum reservoirs.

A student can choose to graduate with ONLY one of the following:

MSc (Offshore Technology)
MSc (Offshore Technology) with Specialization in Subsea Engineering
MSc (Offshore Technology) with Specialization in Petroleum Engineering

Students of MSc (Offshore Technology) now have an option to participate in an exchange programme with either Delft University of Technology (TUD) or Norwegian University of Science & Technology (NTNU).

Modules for MSc (Offshore) programme

The programme’s modules are presented in the following three groups:

(i) Modules in Offshore Technology
All modules below are 4 MCs each with the exception of OT5001 Independent Study Module which is 8 MCs.

OT5001 Independent Study Module

OT5101 Exploration and Production of Petroleum

OT5102 Oil & Gas Technology
OT5201 Marine Statics & Dynamics
OT5202 Analysis & Design of Offshore Structure
OT5203 Design of Floating Structures
OT5204 Moorings & Risers
OT5205 Offshore Pipelines
OT5206 Offshore Foundations
OT5207 Arctic Engineering
OT5301 Subsea Systems Engineering
OT5303 Subsea Control
OT5304 Subsea Construction & Operations Support
OT5305 Pressure Surges in Oil & Gas Flow Systems
OT5401 Geoscience for Petroleum Exploration
OT5402 Seismic Acquisition and Processing
OT5403 Petrophysics and Downhole Measurements
OT5404 Reservoir Characterization and Rock Physics
OT5405 Enhanced Oil Recovery
OT5406 Petroleum Production Engineering
OT5407 Petroleum Geomechanics
OT5881 Topics in Offshore Technology Engineering
OT5882 Topics in Subsea Engineering
(ii) **Modules for Specialization in Subsea Engineering**
All modules below are 4 MCs each with the exception of OT5001A Independent Study Module: Subsea Engineering which is 8 MCs.

- OT5102 Oil & Gas Technology (Compulsory)
- OT5301 Subsea Systems Engineering. [Compulsory unless the student has taken this module for his/her B.Eng.(Mechanical Engineering) programme]
- OT5205 Offshore Pipelines
- OT5302 Flow Assurance
- OT5303 Subsea Control
- OT5304 Subsea Construction & Operations Support
- OT5305 Pressure Surges in Oil & Gas Flow Systems
- OT5882 Topics in Subsea Engineering
- OT5001A Independent Study Module: Subsea Engineering

(iii) **Modules for Specialization in Petroleum Engineering**
All modules below are 4 MCs each with the exception of OT5001B Independent Study Module: Petroleum Engineering which is 8 MCs.

- OT5401 Geoscience for Petroleum Exploration
- OT5402 Seismic Acquisition and Processing
- OT5403 Petrophysics and Downhole Measurements
- OT5404 Reservoir Characterization and Rock Physics
OT5405 Enhanced Oil Recovery

OT5406 Petroleum Production Engineering

OT5407 Petroleum Geomechanics

OT5883 Topics in Petroleum Engineering

OT5001B Independent Study Module: Petroleum Engineering (8 MCs)

(iv) **Elective modules**

All modules below are 4 MCs each.

CE4257 Linear Finite Element Analysis,

CE4258 Structural Stability and Dynamics

CE5105 Analytical & Numerical Methods in Foundation Engineering

CE5308 Coastal Engineering and Sediment Transport

CE5509 Advanced Structural Steel Design

CE5603 Engineering Economics and Project Evaluation

CE5702 CE Reliability Analysis & Design

CE5804 Global Infrastructure Project Management

CE6003 Numerical Methods in Engineering Mechanics

CE6006 Advanced Finite Element Analysis

CE6101 Geotechnical Constitutive Modelling

ME5103 Plates and Shells (from AY2017/2018)

*(Students who have read CE5514 Plate & Shells are not allowed to read ME5103)*
Programme Structure

**MSc (Offshore Technology)**
Students reading the programme without specialising in Subsea Engineering or Petroleum Engineering, must successfully complete a programme with at least 40 MCs and achieve a minimum CAP of 3.00 which consist of:

1. at least 28 MCs (7 modules) from modules listed in part (i); &
2. the remaining up to 12 MCs (3 modules) from modules listed in part (iv) However, subject to prior approval from the Department’s Programme Management Committee, up to two (2) modules may be taken from outside the prescribed programme’s curriculum.

**MSc(Offshore Technology) with Specialisation in Subsea Engineering**
To be eligible for the specialization, students must successfully complete a programme at least 40 MCs and achieve a minimum CAP of 3.00 which consist of:

1. at least 20 MCs (5 modules) from modules listed in part (ii); &
2. at least 28 MCs less the number of MCs taken in (a) from modules listed in part (i); &
3. the remaining up to 12 MCs (3 modules) from modules listed in part (iv). However, subject to prior approval from the Department’s Programme Management Committee, up to two (2) modules may be taken from outside the prescribed programme’s curriculum.

**MSc (Offshore Technology) with Specialization in Petroleum Engineering**
To be eligible for the specialization, students must successfully complete a programme at least 40 MCs and achieve a minimum CAP of 3.00 which consist of:

1. at least 20 MCs (5 modules) from modules listed in part (iii); &
2. at least 28 MCs less the number of MCs taken in (a) from modules listed in part (i); &
3. the remaining up to 12 MCs (3 modules) from modules listed in part (iv). However, subject to prior approval from the Department’s Programme Management Committee, up to two (2) modules may be taken from outside the prescribed programme’s curriculum.
MSc (Offshore Technology) students are not allowed to do a module which they have previously taken and counted towards a different degree programme without prior permission from the Head of Department.