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.

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
MSc (Offshore Technology) with Specialization in Offshore Structures

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 Analysis & Design of Fixed Offshore Structure
OT5202 Analysis & Design of Floating Offshore Structures
OT5203 Moorings & Risers
OT5204 Offshore Pipelines
OT5205 Offshore Foundations
OT5206 Arctic Offshore Engineering
OT5207 Subsea Systems Engineering
OT5208 Subsea Control
OT5209 Subsea Construction & Operations Support
OT5210 Pressure Surges in Oil & Gas Flow Systems
OT5301 Seismic Acquisition and Processing
OT5302 Petrophysics and Downhole Measurements
OT5404 Reservoir Characterization and Rock Physics
OT5405 Enhanced Oil Recovery
OT5406 Petroleum Production Engineering
OT5407 Petroleum Geomechanics
OT5408 Unconventional and Renewable Energy Resources
OT5881 Topics in Offshore Technology Engineering
OT5882 Topics in Subsea Engineering
OT5883B Topics in Petroleum Engineering: Petroleum Reservoir
OT5883C Topics in Petroleum Engineering: Practical Inversion Methods for Geophysical Imaging
CE5307A Ocean Waves (2 MCs)
CE5307B Hydrodynamic Loads on Offshore Structures (2 MCs)
CE5307C Finite Amplitude Wave Theories & Their Applications (2 MCs)
ME5301 Flow Systems Analysis
ME5506 Corrosion of Materials
ME5513 Fracture and Fatigue of Materials

(ii) **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)  
ME5201 Thermal Systems Design  
ME5402 Advanced Robotics  
SH5204 Safety Engineering

(iii) **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 (from term 1610)
OT5882 Topics in Subsea Engineering
OT5001A Independent Study Module: Subsea Engineering (8 MCs)

(iv) **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
OT5408 Unconventional and Renewable Energy Resources
OT5883B Topics in Petroleum Engineering: Petroleum Reservoir
OT5883C Topics in Petroleum Engineering: Practical Inversion Methods for Geophysical Imaging
OT5001B Independent Study Module: Petroleum Engineering (8 MCs)

(v) **Modules for Specialization in Offshore Structures**
All modules below are 4 MCs each with the exception of OT5001C Independent Study Module: Offshore Structures which is 8 MCs.

CE5307A Ocean Waves (2 MCs)
CE5307B Hydrodynamic Loads on Offshore Structures (2 MCs)
CE5307C Finite Amplitude Wave Theories & Their Applications (2 MCs)
OT5202 Analysis & Design of Fixed Offshore Structure
OT5203 Analysis & Design of Floating Offshore Structures
OT5204 Moorings & Risers
OT5206 Offshore Foundations
OT5207 Arctic Offshore Engineering
OT5001C Independent Study Module: Offshore Structures (8 MCs)
Programme Structure

1. **MSc. (Offshore Technology)**
   Students reading the programme without a specialisation must successfully complete a programme with at least 40 MCs and achieve a minimum CAP of 3.00 which consists of:
   
   (a) at least 28 MCs from modules listed in part (i) Modules in Offshore Technology; &
   (b) the remaining up to 12 MCs from modules listed in part (ii) Elective Modules. However, subject to prior approval from the Department’s Programme Management Committee, up to two 25% (or 10 MCs) may be taken from outside the prescribed programme’s curriculum.

2. **MSc. (Offshore Technology) with Specialization 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 details in the Programme Structure below.
   
   (a) at least 20 MCs from modules listed in part (iii) Modules for Specialization in Subsea Engineering; &
   (b) at least 28 MCs less the number of MCs taken in (a) from modules listed in part (i) Modules in Offshore Technology; &
   (c) the remaining up to 12 MCs from modules listed in part (ii) Elective Modules**.

3. **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 details in the Programme Structure below.
   
   (a) at least 20 MCs from modules listed in part (iv) Modules for Specialization in Petroleum Engineering; &
   (b) at least 28 MCs less the number of MCs taken in (a) from modules listed in part (i) Modules in Offshore Technology; &
   (c) the remaining up to 12 MCs from modules listed in part (ii) Elective Modules**.

4. **MSc. (Offshore Technology) with Specialization in Offshore Structures**
   
   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 details in the Programme Structure below.
(a) at least 20 MCs from modules listed in part (v) Modules for Specialization in Offshore Structures; &
(b) at least 28 MCs less the number of MCs taken in (a) from modules listed in part (i) Modules in Offshore Technology; &
(c) the remaining up to 12 MCs from modules listed in part (ii) Elective Modules**.

** Subject to prior approval from the Department’s Programme Management Committee, up to two 25% (or 10 MCs) may be taken from outside the prescribed programme’s curriculum.