

Overview of Subsea Engineering Education Programmes in NUS

Education programmes

- B.Eng. (Civil) with Specialization in Offshore Engineering (2004)
- B.Eng. (Mechanical) with Specialization in Offshore Oil & Gas Technology (2005)
(with a Track in Subsea Engineering: August 2012)
- M.Sc. (Civil) with Specialization in Offshore Engineering (2006)
- M.Sc. (Mechanical) with Specialization in Offshore Oil & Gas Technology (2007)
- M.Sc. in Offshore Technology – integrating the above 2 M.Sc. (August 2011)
(with Specialization in Subsea Engineering: August 2012)
- M.Eng. and Ph.D. Research in Offshore Technology

EDB Subsea Engineering Professorships Programme

- Dr Bil Loth, WD Loth and Company
- Alistair Birnie, Denmore Tech Ltd, formerly CEO Subsea UK and Global Head of Technology, Aker Subsea

B.Eng. (Mechanical) Specialization in Offshore Oil & Gas Technology (Subsea Track)



Centre for Offshore Research
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Faculty of Engineering

Students must offer the following modules:

- ME4105 Offshore Oil & Gas Technology
- GE3880A Topics in Petroleum Geosciences
- OT5301 Subsea Systems Engineering
- Choose at least one module from a list of nine Technical Electives

Students will serve their internships or industry attachments with **Subsea related** companies to give them first-hand knowledge and experience. They will also work on **Subsea related** Design and Final Year Projects.

M.Sc. in Offshore Technology



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Students must successfully complete at least 40 MCs
which are made up of at least 28 MCs from the list of
Modules in Offshore Technology

Module Code	Module Title
OT5001	Independent Study Module (8 MCs)
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
OT5208	Fatigue and Fracture for Offshore Structures
OT5301	Subsea Systems Engineering
OT5302	Flow Assurance
OT5303	Subsea Control
OT5304	Subsea Construction & Operational Support
OT5881	Topics in Offshore Engineering
OT5882	Topics in Subsea Engineering
CE5307	Wave Hydrodynamics and Physical Oceanography
ME5301	Flow Systems Analysis
ME5506	Corrosion of Materials

M.Sc. in Offshore Technology (Specialization in Subsea Engineering)



NUS
National University
of Singapore

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Students must successfully complete at least 40 MCs which are made up of at least 28 MCs from the list of Modules in Offshore Technology of which at least 20 MCs must be from the following specific modules:

- OT5102 Oil & Gas Technology (4 MCs) (*Compulsory*)
- OT5301 Subsea Systems Engineering (4 MCs) (*Compulsory*)
- OT5302 Flow Assurance (4 MCs)
- OT5303 Subsea Control (4 MCs)
- OT5304 Subsea Construction & Operational Support (4 MCs)
- OT5205 Offshore Pipelines (4 MCs)
- OT5882 Topics in Subsea Engineering (4 MCs)
- OT5001 Independent Study Module (8 MCs), relating to Subsea Engineering

The remaining MCs may come from the list of Elective Modules.

OT5102 Oil and Gas Technology

This module gives an in-depth appreciation of the technologies employed in the upstream oil & gas industry. Apart from the reservoir basics, seismic, exploration, onshore & offshore drilling, mud management, well completion, production, well stimulation, artificial lift methods, improved oil recovery (IOR) & enhanced oil recovery methods (EOR), equipment and floating production systems (FPS), etc, students will also learn about subsea processing technology, and process equipment design, etc.

OT5301 Subsea Systems Engineering

Its contents are focused on giving an overview and understanding of subsea systems employed in the subsea production and processing of oil & gas. Contents to cover subsea systems, equipment and their architecture, offshore exploration, drilling, well completion, subsea processing of oil & gas, subsea control systems, flowline, pipeline and risers, etc.

OT5302 Flow Assurance

Flow Assurance deals with ensuring the safe and uninterrupted transportation of a multiphase mixture of oil, gas and water from the reservoir to the delivery location, especially from any subsea well. Its contents are focused on giving an overview and understanding of the various aspects in both single phase and multiphase flow transportation and assurance issues in the oil & gas industry with emphasis on the subsea production and transportation of oil, gas and water.

OT5303 Subsea Control

Subsea Control is an essential and integral part of all subsea systems. This module introduces the fundamentals and principles of subsea control used in subsea systems for oil & gas production. Subsea data communication systems as well as various subsea protocols used are also addressed in this module.

OT5304 Subsea Construction & Operational Support

The design of subsea systems is significantly affected by operational considerations and can radically change a system configuration. Key considerations that must be taken into account in a subsea system design include vessel availability, design for weather window, reduction in number of operations, elimination of construction risk and ability to perform an early production start-up. It will look specifically at technologies that are used in subsea operations that are essential to understand their use and limitations.

OT5205 Offshore Pipelines

The module is concerned with the design, fabrication, installation and operations of offshore pipelines. Students will learn advanced concepts on various aspects of offshore pipelines, including material selection; loads; hydrodynamic and on-bottom stability; collapse & buckling; pipeline design & evaluation; fabrication; installation methods and controls; pipeline operations; risk and safety.