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## MODULE DESCRIPTOR

### Module Title

Offshore Engineering

Reference	EN3581	Version	4
Created	May 2017	SCQF Level	SCQF 9
Approved	March 2004	SCQF Points	15
Amended	May 2017	ECTS Points	7.5

### Aims of Module

To provide the student with the ability to recognise the core principles of offshore technology.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Explain how a well is drilled, including the functions of the specialist equipment.
- 2 Summarise the fundamentals of petroleum technology, including oil and gas reservoirs.
- 3 Apply standard hydrodynamic equations to predict the loading applied to fixed structures.
- 4 Appraise various options for the development of offshore oil and gas fields.

### Indicative Module Content

\* Overview of overall well completion from exploration to drilling, completion and production. The Drilling System and Equipment: \* Types of Drilling Rigs. \* Drilling Rig Components: Derricks/Masts, Prime Movers; Mud Pumps and Circulation systems; Power transmission, Rotary and hoisting systems; Draw-work; Drillstring and BHA; Pipe handling and racking systems. \* Basic introduction to well design: Factors relating to definition of well pattern( Vertical/directional wells, extended reach, multilateral and horizontal wells, etc); Drillstring and BHA design. Production development options: \* Platforms-steel/ concrete \* Floating systems-semi-submersible or FPSO \* TLPs \*Subsea systems-tieback; risers-rigid/flexible \*Subsea trees classic v horizontal \* Pipelines v tankers. Hydrodynamic effects \* Environmental conditions - wind, wave and current \*Wave loading and structural response \* Constitution and properties of oil and natural gas \* Oil and gas reservoirs \* Phase behaviour of hydrocarbon systems \* Petroleum Fluids

### Module Delivery

This is a lecture-based module supplemented by tutorials and directed study.

<b>Indicative Student Workload</b>	Full Time	Part Time
Contact Hours	40	40
Non-Contact Hours	110	110
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
<b>TOTAL</b>	<b>150</b>	<b>150</b>
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

## ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

### Component 1

Type: Coursework Weighting: 30% Outcomes Assessed: 2  
 Description: A series of in-class quizzes.

### Component 2

Type: Examination Weighting: 70% Outcomes Assessed: 1, 3, 4  
 Description: A closed book examination.

## MODULE PERFORMANCE DESCRIPTOR

### Explanatory Text

To pass the module, you must achieve a 40% weighted average mark from the exam and coursework. In addition you need to achieve at least 35% in both the individual exam and the coursework components.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	=>70%
<b>B</b>	60-69%
<b>C</b>	50-59%
<b>D</b>	40-49%
<b>E</b>	35-39%
<b>F</b>	0-34%
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

## Module Requirements

Prerequisites for Module None.  
 Corequisites for module None.  
 Precluded Modules None.

**INDICATIVE BIBLIOGRAPHY**

- 1 RABIA, H., 1985, Oilwell Drilling Engineering - Principles and Practice. London: Graham & Trotman
- 2 JAHN F., COOK, M. AND GRAHAM, M., 2008, Hydrocarbon Exploration and Production. Amsterdam : Elsevier.
- 3 International Association of Drilling Contractors (IADC), 2015 IADC Drilling Manual, 12th edition. International Association of Drilling Contractors (IADC), Houston, Texas.
- 4 SELLEY, R., Elements of Petroleum Geology ISBN-13: 978-0123860316
- 5 RANDALL, R.E., 2010. Elements of Ocean Engineering, 2nd ed. College Station, TX.: Society of Naval Architects.
- 6 Selley, Richard C., Sonnenberg, Stephen A., 2022, Elements of petroleum geology(4th ed). Amsterdam : Academic Press