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MODULE DESCRIPTOR

Module Title

Oil And Gas: General Engineering

Reference	ENM501	Version	4
Created	March 2020	SCQF Level	SCQF 11
Approved	August 2013	SCQF Points	15
Amended	June 2020	ECTS Points	7.5

Aims of Module

This module provides a comprehensive introduction to the basic methods, concepts and technology used in the production of hydrocarbons, given a broad understanding of the essential principles of Well Construction, specifically from a perspective of engineering integrity. It also presents a systematic approach to improve the safe planning and the design of wells (in particular: introduction to drilling operation, well completion and optimisation of production facilities over the well life cycle).

Learning Outcomes for Module

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

- 1 Demonstrate detailed knowledge and application of primary rig systems and drilling components. Discuss the problems when drilling through different formations and critically identify the actions required to mitigate these.
- 2 Critically evaluate cement and drilling fluids functions and properties and perform calculations relating to drilling operations.
- 3 Appraise the principal completion options and identify the main completion components from the reservoir interface to surface production facilities and their respective functions.
- 4 Demonstrate critical understanding of structures, transportation, separation systems, fluid measurement and treatment to evaluate performance of both the component and the full system over the life-cycle of the facility.
- 5 Critically review and evaluate decommissioning options and techniques by applying relevant decommissioning legislation.

Indicative Module Content

INTRODUCTION - History, People, Well Lifecycle and Rig Components drilling process & design drilling process, Drillstring & Ancillaries BHA, drilling fluids, cements, casing string, well control barriers - Pressures completion fundamentals- Completion Function, Operations & Design Process Completion Architecture, completion functions and completion essentials, structures, transportation, separation systems, fluid measurement and treatment (oil treatment, gas treatment and produced water treatment), decommissioning options and techniques

Module Delivery

The module will be delivered by means of direct and online lectures, tutorials, self guided study and fieldwork.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	60	40
Non-Contact Hours	90	110
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<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:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Component 1 is a closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

In order to pass the module, students should achieve a mark of at least 40% and an overall grade of D or greater.

Module Grade	Minimum Requirements to achieve Module Grade:
A	Greater than or equal to 70%
B	In the range 60% to 69%
C	In the range 50% to 59%
D	In the range 40% to 49%
E	In the range 35% to 39%
F	Less than 34%
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Normally a 2.2 UK honours degree in Engineering or a related discipline, and proficiency in English language for academic purposes. Qualification through previous relevant industry experience may be considered.
Corequisites for module	None.
Precluded Modules	This module is not suitable for students following an MSc in Professional Studies programme unless they meet the entry qualifications stipulated in the University Regulations on admission and the prerequisites above

INDICATIVE BIBLIOGRAPHY

- 1 AADNOY, B.S. 1997. Modern Well Design. Gulf Publishing Company.
- 2 ARCHER, J.S., WALL, C.G., Petroleum Engineering: Principles and Practice (Graham & Trotman, 1986, ISBN 0860106659).
- 3 BOURGOYNE et Al. 1984. Applied Drilling Engineering. SPE Publications.
- 4 ECONOMIDES, M J et Al. 1998. Petroleum Well Construction. John Wiley and Sons.
- 5 JAHN, F., COOK, M., GRAHAM, M., Hydrocarbon Exploration and Production (Elsevier, 1998, ISBN 0444829210).
- 6 STONELEY, R., Introduction to Petroleum Exploration for Non-Geologists (OUP, 1995, ISBN 0198548567).
- 7 DARLING, T., 2005. Well Logging and Formation Evaluation; Gulf Professional Publishing <https://doi.org/10.1016/B978-0-7506-7883-4.X5000-1>.