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MODULE DESCRIPTOR

Module Title

Well Completions and Subsea Systems

Reference	ENM206	Version	8
Created	March 2020	SCQF Level	SCQF 11
Approved	April 2006	SCQF Points	15
Amended	June 2020	ECTS Points	7.5

Aims of Module

This module aims to develop an ability to apply advanced completion technologies to solve particular petroleum production challenges. It also aims to develop an ability to integrate these technologies in the complex system represented by the subsea environment, both in terms of mechanical well intervention interfaces and the specific design and operation attributes of subsea production facilities.

Learning Outcomes for Module

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

1	Perform advanced well tubing string and flow line design and stress analysis calculations, and justify the use of appropriate design safety factors.
2	Appraise and identify opportunities for deployment of advanced, novel and emerging completion technologies and evaluate the associated risks and rewards.
3	Develop a programme for subsea well production commissioning, taking into account the potential impact of flow assurance considerations and transient multi-phase flow phenomenon.
4	Critically evaluate the options for subsea well and infrastructure intervention, comparing the relative technical capabilities, risk and cost implications.
5	Identify and analyse methods of managing and/or mitigating the impact of hydrodynamic phenomena on marine risers and flowlines.

Indicative Module Content

Tubing Stress Analysis, Flowline Design, Coiled Tubing, Expandable Pipe, API / ISO Specs & RPs, Horizontal / Multi-lateral / Intelligent Wells, Deepwater, HPHT, Subsea Controls, Combined Operations, Transient Flow & Terrain Slugging, Subsea Intervention technology, Hydrodynamics, Perforating.

Module Delivery

This module may be delivered by means of lectures, tutorials and student-centred learning activities supplemented by industrial visits/industry speakers.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	60	36
Non-Contact Hours	90	114
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

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

Component 1

Type:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

In order to pass the module, students should achieve a mark of at least 50% 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 55% to 59%
D	In the range 50% to 54%
E	In the range 40% to 49%
F	Less than 40%
NS	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.

ADDITIONAL NOTES

Part Time refers to Online Learning Part Time.

INDICATIVE BIBLIOGRAPHY

1	AMERICAN PETROLEUM INSTITUTE, Miscellaneous Recommended Practices, Specifications & Bulletins from Series 5 "Tubular Goods" and Series 17 "Subsea Production Systems". Washington: API/ISO.
2	BELLARBY, J. 2009. Well Completion Design. Oxford. Elsevier.
3	CLEGG, J.D., 2007. Petroleum Engineering Handbook, Vol IV Production Operations Engineering. Richardson, TX: SPE.
4	ECONOMIDES, M.J., ed. 1998. Petroleum Well Construction. Chichester: John Wiley & Sons.
5	CRUMPTON, H., 2018. Well Control for Completions and Interventions. Scotland: Gulf Professional Publishing.
6	GUO, B., et al 2007. Petroleum Production Engineering: A Computer Assisted Approach. Burlington, MA: Gulf Professional Publishing.
7	Journal articles, conference proceedings, and appropriate websites. Example OnePetro, Knovel, ASME.
8	KING, G. E., 1998. An Introduction to the Basics of Well Completions, Stimulations and Workovers. Tulsa, OK: George E. King.