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MODULE DESCRIPTOR

Module Title

Subsea Pipeline and Riser Design

Reference	ENM229	Version	3
Created	March 2020	SCQF Level	SCQF 11
Approved	August 2013	SCQF Points	15
Amended	June 2020	ECTS Points	7.5

Aims of Module

To provide an in-depth knowledge and understanding of the theory and practical issues involved in subsea pipelines and risers, and their design and operation.

Learning Outcomes for Module

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

1	Demonstrate extensive, detailed critical knowledge and understanding of the types, properties, and manufacture, of pipelines.
2	Critically evaluate pipeline design factors (parameters), flow analysis and sizing of pipelines.
3	Apply and critically analyse the theory, concepts and principles of pipeline mechanical design.
4	Demonstrate extensive, detailed critical knowledge and understanding of environmental and topographical factors in the in-situ design of pipelines.
5	Apply and critically analyse the theory, concepts and principles of riser design.

Indicative Module Content

Introduction to Subsea Pipelines; Properties of Materials; Pipe Materials; Pipeline Fundamentals; Buckling; Pipeline Stability; Flow Regime and Thermal Loss; Spanning Pipelines; Introduction to Riser System; Types of Risers; Catenary Theory; Rise Pipe Stresses.

Module Delivery

This is a lecture and tutorial based full time course, with case study work, plus private study and discussion. The course is available an online learning module with online tutor support. A blend of online learning and direct attendance is also possible.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	48	60
Non-Contact Hours	102	90
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:	Coursework	Weighting:	50%	Outcomes Assessed:	5
Description:	Component 1 is a coursework and will involve preparation of a short report presenting results and may also require use of appropriate technical applications software.				

Component 2

Type:	Examination	Weighting:	50%	Outcomes Assessed:	1, 2, 3, 4
Description:	Component 2 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% in each component (which has a weighting of 30% or more) and an overall grade of D or greater. Non submission for any assessment component will result in an overall grade of NS for the module.

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	Normally a UK honours degree, or equivalent, in Engineering or related discipline at class 2.2 or above and proficiency in English language for academic purposes (IELTS minimum score of 6.5 or equivalent).
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.

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ADDITIONAL NOTES

Part Time refers to Online Learning (OL)

INDICATIVE BIBLIOGRAPHY

1	BAI, Y. and BAI, Q., 2005. Subsea Pipelines & Risers. Elsevier.
2	BRAESTRUP, M.W. ed, 2005. Design and Installation of Marine Pipelines. Blackwell UK.
3	PALMER, A. C. and KING, R. A., 2004. Subsea Pipeline Engineering. PennWell.
4	DNVGL-RP-F109 On-bottom stability design of submarine pipelines
5	HEARN, E.J. 1997 Mechanics of Materials, Vol 1: An Introduction to the Mechanics of Elastic and Plastic Deformation of Solids and Structural Materials, 3rd Ed. Oxford: Butterworth-Heinemann.
6	GUO, B. et al. 2005. Offshore Pipelines. Burlington, MA: Gulf Professional Publishing.
7	KYRIAKIDES, S., CORONA, E. 2007. Mechanics of Offshore Pipelines, Vol 1:Buckling and Collapse. Oxford: Elsevier.