

MODULE DESCRIPTOR

Module Title

Offshore Operations, Monitoring and Maintenance

Reference	ENM284	Version	2
Created	August 2021	SCQF Level	SCQF 11
Approved	January 2018	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

This module aims to identify the challenges of operating in offshore environment and applies strategies that can be used to meet these challenges.

Learning Outcomes for Module

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

- 1 Demonstrate a critical awareness of challenges with offshore operations and maintenance.
- 2 Critically analyse the challenges, benefits and limitations of using monitoring solutions in offshore sites.
- 3 Critically review the maintenance strategies and tools used in planning maintenance.
- 4 Demonstrate general awareness of energy policies and regulatory requirements for offshore operations.
- 5 Applying a range of specialist research methods, demonstrate the use of risk assessment of offshore work in a case study.

Indicative Module Content

Offshore Operations - benefits, challenges, and limitations. Strategies, tools, and equipment to plan offshore activities including installation, monitoring, and maintenance. Offshore transportation. Use of ROV, Drone. Online and offline condition monitoring methods. Lubricating oil analysis, vibration analysis, visual analysis, thermography, performance monitoring, ultrasound, reflectometry, strain measurement. SCADA system. Detection and analysis of failures in machines. Maintenance management - Failure based maintenance, Time based maintenance, Condition based maintenance. Computerised Maintenance Management Software (CMMS), key components of CMMS. Challenges of offshore based maintenance, principles for optimising offshore based maintenance. Energy policies, including regulatory requirements for offshore operation; health and safety, environment, port authority, insurance and legal requirements. Risk assessment - methods for assessing risk, risk matrix and its application. Hazard rating. Economics of offshore operation and maintenance. Industrial case study.

Module Delivery

This module will be delivered on campus full time and online via distance learning. The module is taught through lectures and case studies.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	60	60
Non-Contact Hours	90	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:	Report.				

Component 2

Type:	Examination	Weighting:	50%	Outcomes Assessed:	1, 2, 3, 4
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and an overall grade D is required to pass the module. The component weighting is as follows: C1 is worth 50% and C2 is worth 50%.

		Examination:						NS
		A	B	C	D	E	F	
Coursework:	A	A	A	B	B	C	E	
	B	A	B	B	C	C	E	
	C	B	B	C	C	D	E	
	D	B	C	C	D	D	E	
	E	C	C	D	D	E	E	
	F	E	E	E	E	E	F	
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.

INDICATIVE BIBLIOGRAPHY

- | | |
|---|---|
| 1 | TAVNER, P., 2012. Offshore Wind Turbines: Reliability. Availability and Maintenance, The Institution of Engineering and Technology, London, UK. |
| 2 | KELLY, A., 1997. Maintenance strategy. Elsevier. |
| 3 | RAO, B.K.N. ed., 1996. Handbook of condition monitoring. Elsevier. |
| 4 | PATTON, J.D., 1980. Maintainability and maintenance management (Vol. 350). Research Triangle Park, NC: Instrument Society of America. |
| 5 | ANDREWS, J.D. and MOSS, T.R., 2002. Reliability and risk assessment. Wiley-Blackwell. |
| 6 | GOLDTHAU, A. ed., 2016. The handbook of global energy policy. John Wiley & Sons. |