

Liverpool John Moores University

Title: Offshore Design and Structures
Status: Definitive
Code: **6124MECH** (125117)
Version Start Date: 01-08-2018

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Allan Carrier	Y

Academic Level: FHEQ6
Credit Value: 20
Total Delivered Hours: 66
Total Learning Hours: 200
Private Study: 134

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Practical	22
Tutorial	22

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS2	Report	60	
Portfolio	AS1	Portfolio	40	

Aims

*The basic concepts of design of fixed and floating offshore oil and gas platforms; offshore pipeline and risers; mooring system and subsea foundations.
Basic application of hydrodynamic principles to the design and prediction of structural response of fixed and floating offshore platforms.
Factors influencing the dynamic behaviour of fixed and floating offshore platforms.
Criteria for selection of appropriate materials for the design and fabrication of*

offshore structures.
Installation and operational issues related with offshore structures.

Learning Outcomes

After completing the module the student should be able to:

- 1 Design of fixed and floating offshore structures (oil and gas platforms, offshore pipeline and risers; mooring system and subsea foundations).
- 2 Identify the key parameters for the design and assessment of dynamic behaviour of fixed and floating offshore structures.
- 3 Analyse and predict the hydrodynamic and structural responses of fixed and floating offshore structures and the dynamics of offshore installations.
- 4 Evaluate the most appropriate materials for the design and fabrication of offshore structures.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Report	1	2	3	4
Portfolio	1	2	3	4

Outline Syllabus

Overview of basic design concepts of fixed and floating offshore structures.
Offshore field development and concept selection of fixed and floating offshore systems.
Evaluation of environmental loadings for offshore structural design - wind, wave and current conditions for different offshore sites and return periods.
Considerations and selection of materials for offshore structural design
Design of fixed offshore structures; jacket structures, jack-up structures, compliant tower structures.
Design of floating offshore structures - FPSO systems, semi-submersibles, TLPs, Spars
Design of offshore pipeline, risers, mooring systems and foundations.
Installation of underwater installations (Subsea templates – PLET and PLEM, Manifolds, ROV).

Learning Activities

A combination of lectures, tutorials and practical's.

Notes

This module will provide a good grounding for those students wishing to pursue a

career in the following marine related disciplines or industries: Marine Engineering Operations, Offshore and Subsea Installation Design, Marine Engineering Design, Marine Superintendent, Surveying and Shipbuilding.