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DEEPWATER MAINTENANCE (LECTURE NOTES)

CREATED BY: PROF DR. NASIR SHAFIQ

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MARE

**Deepwater Maintenance
(EMM 5103)**

MSc - Asset Maintenance and Management

Professor Dr Nasir Shafiq

Course outline

- Introduction and an overview of offshore structures
- Deepwater Floating Production Systems
- DW Floaters Design Criteria
 - Hydrostatics and Stability
 - Global Response of Floating Structures
- Feature and Concept of Floaters
 - Spar
 - Tension Leg Platform
 - Semi-submersible
 - Floating, production, storage and offloading (FPSO)
 - Sub-Sea Systems

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BIOGRAPHY OF AUTHOR

Nasir Shafiq is a Professor in Civil Structural Engineering. He joined the Department of Civil & Environmental Engineering at Universiti Teknologi PETRONAS (UTP) Malaysia in 2001. Presently, he is one of the lecturers for the Master program in Asset Management and Maintenance program, of which his course is affiliated with the MARE project. He obtained his first degree from NED University of Engineering and Technology Pakistan in 1982. In 1987, he obtained a Master of Engineering from Asian Institute of Technology Bangkok. He obtained PhD in Civil Engineering from the University of Leeds, UK. Between 2014 and 2017 he was also UTP's Director of research in Sustainable Resources. His specialty is High Performance Concrete, Structural Retrofitting and Repair, FE Modeling, Building Information Modeling BIM and Low Carbon Technologies including Foot Print.

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PREFACE

Deepwater Maintenance is offered to postgraduate students enrolled in MSc in Asset Maintenance and Management. This elective course (4 ECTS) covers the introduction to offshore exploration and mining, overview of deepwater technology, deepwater facilities and systems, deepwater fundamentals, and decommissioning. The key learning outcomes of this course are, students should be able to explain various forms of deepwater facilities and systems, including floating vessels and offshore structures, demonstrate the types of deepwater maintenance, and benchmark and select the most appropriate facilities and systems installation mode(s), and maintenance practice(s).

The MARE topic which was introduced in this course is the introduction to offshore exploration and mining. In the newly added MARE topic, it is comprised of definition of offshore blocks, preliminary explorations, methods of exploration, reservoirs and hydrocarbon feasibility, project economics and feasibility. The course is delivered by seminar/lecture delivery while the students' assessment is based on end-of-topic quiz, test, assignment, and final examinations.

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LIST OF THE TLM AVAILABLE:

The course is delivered online, via guided learning by the course lecturer and additional video lectures.

(a) List of Lecture Notes

Introduction to Offshore Exploration and Mining

- Definition of offshore blocks
- Preliminary explorations
- Methods of exploration
- Reservoirs and hydrocarbon feasibility
- Project economics and feasibility

(b) Video / MOOC

1. Deepwater (Subsea)

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