



Template syllabus of the revised courses

Course Name : Deepwater Maintenance

Number of credits : 5 ECTS

Period: Spring semester

Coordinator	Prof Dr Nasir Shafiq
Credits	3 credit hours (5 ECTS)
Lecturers	Prof Dr Nasir Shafiq, Prof Dr Fakhruddin Mohd Hashim
Level	Postgraduate
Host institution	Universiti Teknologi PETRONAS
Course duration	12 weeks
New/revised	Revised

Summary

The course covers overview of deepwater technology, deepwater facilities and systems, deepwater fundamentals, and deepwater maintenance, and deepwater simulation projects.

Target student audiences

Postgraduate students enrolled in MSc in Asset Maintenance and Management.

Prerequisites

Required courses (or equivalents): None

Aims and objectives

The main course objective is to introduce essential elements in the maintenance of deepwater system.

The Authentic Tasks are:

General learning outcomes:

By the end of the course, successful students will be able to:

1. Explain various forms of deepwater facilities and systems, including floating vessels and offshore structures.
2. Demonstrate the types of deepwater maintenance.
3. Benchmark and select the most appropriate facilities and systems installation mode(s), and maintenance practice(s).

Overview of sessions and teaching methods

The course will make most of interactive and self-reflective methods of teaching and learning.

Learning methods

- Seminar/lecture delivery for 5 days. Students assessment based on end-of-topic quiz and end-of-course presentation of research proposal.



Course outline

Topic 1

Introduction to Offshore Exploration and Mining

- Definition of offshore blocks, preliminary explorations
- Methods of Exploration
- Reservoirs and Hydrocarbon feasibility
- Project Economics and Feasibility

Topic 2

Overview of Deepwater Technology

- Definition of deepwater exploration
- Developments and breakthrough
- Field development cases

Topic 3

Deepwater Facilities and Systems

- Types and forms
- Installation modes
- Intervention

Topic 4

Deepwater Fundamentals

- Flow assurance in pipelines
- Regional geohazard
- Sub-sea processing

Topic 5

Decommissioning

- Looking into the future – decommissioning and asset abandonment
- Decommissioning strategies and obligations
- The scale of the challenges
- Planning for decommissioning
- IMO Guidelines for decommissioning
- Treating and disposal of waste
- Pipeline and structural decommissioning
- Regulatory codes, standards and guidance documents

Deepwater simulation projects / case-studies

Literature

Reference:

1. W.L.Leffler, R.A.Pattarozzi, and G. Sterling, Deepwater Petroleum Exploration and Production : A Non-technical Guide, PennWell Corp., 2006.
2. PETRONAS-PETRAD-INSTOK-CCOP Deepwater Technology Seminar – Technical Papers, May, 2006.
3. Deepwater Technology Development, INSTOK Workshop, August, 2005.
E.R.Jeffreys and A.J.Fyfe, Proceedings of Diverless and Deepwater Technology, Graham & Trotman, 1990

Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
In-class activities (48 hours)			
Guided Learning and Moderated in-class discussions	1. Explain various forms of deepwater facilities and systems, including floating vessels and offshore structures	Class participation and preparedness for discussions	13
Guided Learning and Moderated in-class discussions	2. Demonstrate the types of deepwater maintenance.	Class participation and preparedness for discussions	10
Guided Learning and Moderated in-class discussions	3. Benchmark and select the most appropriate facilities and systems installation mode(s), and maintenance practice(s)	Class participation and preparedness for discussions	13
Practical	4. Benchmark and select the most appropriate facilities and systems installation mode(s), and maintenance practice(s)	Deepwater simulation projects / case studies	12
Independent work (100 hours)			
Self-Learning (Independent Learning)	1. Explain various forms of deepwater facilities and systems, including floating vessels and offshore structures	Assignment, Quiz, Test (Formative) and Final Examination (Summative)	26
Self-Learning (Independent Learning)	2. Demonstrate the types of deepwater maintenance.	Assignment, Quiz, Test (Formative) and Final Examination (Summative)	20
Self-Learning (Independent Learning)	3. Benchmark and select the most appropriate facilities and systems installation mode(s), and maintenance practice(s)	Assignment, Quiz, Test (Formative) and Final Examination (Summative)	26
Group Work on practical example		Exercise	28
Total			148



Grading

The students' performance will be based on the following:

Assessment Assignment, Quiz, Test (Formative) and Final Examination (Summative).

Evaluation

- A (85 - 100)
- A- (80 – 84.9)
- B+ (75 – 79.9)
- B (65 – 74.9)
- C+ (55 - 64.9)
- C (50 – 54.9)
- D+ (45 – 49.9)
- D (40 – 44.9)
- F (<40)