

# GULF INSTITUTE



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# Offshore Structure Design, Construction, Inspection, Maintenance & Repair

## INTRODUCTION

- The aim of this training course is to provide the participants with a complete and up-to-date overview of offshore structures engineering in general and steel jackets in particular. It will give a picture of the work of ocean and structural design engineering, using case studies to highlight the topics discussed.
- This Offshore Structure Design, Construction, Inspection, Maintenance and Repair training course will illustrate all information about fixed offshore structure platform. The basic design and loads that affect the offshore structure platform will be discussed in detail with the up-to-date method of structure analysis as the pushover structure analysis.
- The selection of the proper configuration and layout of the platform; the construction and repair of the mature structure; and the risk-based under water inspection with up-to-date methodology will be illustrated in this training course.

## PROGRAMME OBJECTIVES

- An understanding of the planning, concept development, design, construction, installation, operation, inspection and maintenance of Offshore Structures
- An understanding of the design, construction and risk based maintenance for offshore platforms, specifically, the theory and process of such design
- The ability to determine new technology for material of surface and subsurface structures
- An understanding of the use of current, applicable engineering methods in the design of fixed offshore platform
- Familiarity with most updated inspection and maintenance techniques for the offshore structures
- The skills to know the different types of offshore structures including its advantages and disadvantages and design requirements
- The capability to recognize the codes of inspection and the identify the types of preventive and recommended practices for maintenance in offshore structures

## WHO SHOULD ATTEND?

- Project / Design / Construction Engineers
- Project Managers from Oil & Gas, Construction, Design and Installation Companies and Regulatory Authorities
- Those who have recently moved into Offshore Structural Engineering
- Those who hold broad responsibilities that include Offshore Structures

## TRAINING METHODOLOGY

- The Offshore Structure Design, Construction, Inspection, Maintenance and Repair training course will combine presentations with interactive practical exercises, supported by video materials, activities and case studies. Delegates will be encouraged to participate actively in relating the principles of stress management to the particular needs of their workplace.
- In addition to the traditional lectures, the training delivery emphasises the use of group discussions and actual design problems in order to ensure participants can put the newly learned concepts to use.

## PROGRAMME SUMMARY

- This training course will cover all types of fixed offshore structures and, in the case of fixed platforms, applications of these principles. The use of current, applicable engineering methods in the design of fixed offshore platforms will be explored.
- The overall objective is to provide participants with an understanding of the design, construction and risk based maintenance for offshore platforms, specifically, the theory and process of such design.

## PROGRAM OUTLINE

### Introduction to Offshore Structures and Standards

- Types of Offshore Structures with illustrated videos and animations
- Design Parameters, Standards and Specifications
- General Considerations for Design
- Standard and Special Steels
- Material Selections
- Cost Optimization by Design
- Loads Effects on Offshore Structures

### Metoccean, Wave Loading and Buoyancy

- Offshore Site Investigations
- Meteorological and Oceanographically Data
- Wave Theories
- Wind and Wave Forces
- Buoyancy and Stability
- Introduction for Subsea Structures Facilities
- New Technology for Material of Surface and Subsurface Structures

### Geotechnics, Piles and Structural Analysis

- Geotechnical Engineering for Offshore Structures
- Offshore Pile Design
- Design of Axially Loaded Piles

## Detailed Design and Specialized Analysis

- Design of Tubular Members and Tubular Joints
- Welding and Weld Design
- Concepts of Dynamic Analysis
- Spectral Analysis
- Fatigue Design – Deterministic and Spectral
- Earthquake and Seismic Analysis
- Load Out, Transportation and Installation
- Marine Operations

## Structural Integrity, Repair, Risk and Reliability

- Inspection of Offshore Structures
- Codes of Inspection
- Inspection Reporting
- Maintenance and Remedy Action
- Types of Preventive Maintenance for Offshore Structures
- Recommended practices for maintenance of offshore Structures
- Structural Reliability
- Structure Integrity Principles
- Repair Procedure for Damaged Members
- Risk Assessment

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