

# Offshore Structure Design, Construction & Maintenance

## INTRODUCTION

- This Offshore Structure Design, Construction & Maintenance training course will review the fundamentals behind all types of fixed offshore structures and, in the case of fixed platforms, will cover applications of these principles. 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 and the use of current applicable engineering methods in the design of fixed offshore platforms.

This training course will feature:

- Case studies on petroleum industry
- Codes and standards with technical practice
- The new trend of integrity management system
- The engineering and pitfalls in construction
- The pushover structure analysis technique
- ROV under water inspection and CP system design

## OBJECTIVES

At the end of this training course, participants will be familiar with:

- Offshore steel structure design overview
- Offshore structure platform
- The loads applied on offshore structure platform
- The modern technique on the risk based inspection for maintenance plan for fleet platforms
- The steps of fabrication and construction and the ways to control these steps
- The assessment of the existing offshore structure platform
- Design of CP system

## **TRAINING METHODOLOGY**

- This Offshore Structure Design, Construction & Maintenance training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. The daily workshops will be highly interactive and participative. The illustration will depend on videos and photos.
- In addition to the traditional lecture delivery, the training course delivery emphasizes the use of group discussions and actual design problems in order to ensure participants can put the newly learned concepts to use.

## **ORGANISATIONAL IMPACT**

- Enhance the aware of better design for offshore structure
- Improve the organization maintenance budget by new idea for maintenance scheme
- Improve the offshore project output by knowing the up-to-date technology and its practically in real offshore project
- The organization long term investment gain by new ideas to enhance sustainability of the oil and gas offshore project

## **PERSONAL IMPACT**

- Enhance the offshore design capability of the trainee
- Increase knowledge of up to date of design, execution phase
- Increase the skill for maintenance approach
- Increase the skill to enhance quality of all phases of platform installation

## **WHO SHOULD ATTEND?**

This training course is suitable to a wide range of professional structural engineers who are interested in learning about offshore structure design, construction and maintenance:

- Design Structural Engineers
- Supervision Engineer
- Planners
- Steel Fabricator
- Construction Engineers
- Project Engineers

## Course Outline

### Introduction

- Introduction
- Principal of Project Management for Fixed Offshore Structure Platform
- Different Types of Fixed Offshore Structure
- Loads Effects on Fixed Offshore Structure

### Steel Member Design

- General Design Considerations
- Basics Design of Fixed Offshore Platforms
- Offshore Site Investigation
- Wave Theories: Spectral Analysis Application
- Wind and Wave Forces, Computational Hydrodynamics
- Buoyancy and Stability
- Geotechnical Engineering for Offshore Structure

### Connection Design

- Offshore Piles Design Philosophy
- Basics of Earthquake and Seismic Analysis with API Approach
- Fundamental Concepts and Case Studies for Laterally Loaded Piles
- Design of Pile Foundations for Axial Loading
- Concept of Design Steps by Computer Software as (SACS, SESAM, etc.)

### Steel Construction and Maintenance

- Pushover Analysis
- Pipeline Subsea Installation
- Design of Tubular Members
- Welding & Fatigue
- Topsides and Jacket Design
- Different Types of Jacket
- Basic Concepts of Dynamic Analysis
- Soil Dynamics & Mudslides
- Platform Construction

### Offshore Structure Integrity

- Structural Reliability
- Load Out Transportation & Installation
- Structure integrity principal
- Cathodic Protection Design and Anode Retrofit
- Risk Based Maintenance and ROV Inspection Technique