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

Who Should Attend?

This BTS 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 Objectives:

By the end of this course, delegates will be able to:

- 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 Methods:

This training course will utilize 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 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.

Course Outline:

Day One: Introduction

Competency Description: As an engineer, you need to know the main element of offshore steel structure design.

Key behaviors:

- Understand the steps of design for steel structure
- Understand the different steel structure system
- Understand the codes and standards

Topics to be covered:

- Introduction
- Principal of project management for fixed offshore structure platform
- Different types of fixed offshore structure

- Loads effects on Fixed offshore structure
- Design Parameters Specifications
- Applied load by ISO19002 and APIRP2A

Day Two: Steel Member Design

Competency Description: As an engineer, you need to know the design of the main element of the steel structure.

Key behaviors:

- Understand the geotechnical investigation offshore
- Understand the offshore steel structure system
- Understand the loads affect the platform

Topics to be covered:

- 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

Day Three: Connection Design

Competency Description: As an offshore structural engineer, you need to know the ways of design and constructing the pile.

Key behaviors:

- Understand the pile design
- Understand the geotechnical investigation
- Understand the overview the differences between the different softwares

Topics to be covered:

- 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)

Day Four: Steel Construction and Maintenance

Competency Description: As a structural engineer, you need to know the ways of constructing the jacket ad topside.

Key behaviors:

- Understand the construction steps
- Understand the ways of QC for steel structure
- Understand the design of lifting, pull out and launching.

Topics to be covered:

- 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 (Case study)

Day Five: Offshore Structure Integrity

Competency Description: As an engineer, you need to know the integrity management system for offshore structure.

Key behaviors:

- Understand the ways of repair
- Understand the approach of RBI
- Understand the overview about the sustainable structure

Topics to be covered:

- Structural Reliability
- Load Out Transportation & Installation
- Structure integrity principal
- Cathodic protection design and anode retrofit
- Risk based maintenance and ROV inspection technique