Offshore Structural Engineering Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Offshore Structural Engineering Training Course is designed to develop advanced expertise in offshore engineering, marine structures, structural analysis, and energy infrastructure design. With the rapid growth of offshore oil & gas, renewable offshore wind farms, floating platforms, subsea systems, and digital engineering technologies, skilled offshore structural engineers are in high demand. This course provides practical knowledge of offshore platform design, structural integrity management, fatigue assessment, hydrodynamic loading, riser systems, and international offshore standards. Participants will gain exposure to modern engineering tools, finite element analysis (FEA), computational modeling, risk-based inspection (RBI), and sustainable offshore development practices.

The program integrates theoretical concepts, real-world engineering practices, industry case studies, and simulation-based learning to prepare professionals for challenging offshore projects worldwide. Covering fixed platforms, floating structures, FPSO systems, offshore wind foundations, and marine operations, this training develops competencies aligned with API, ISO, DNV, and ABS standards. Through expert-led sessions and project-based learning, participants will enhance their capabilities in offshore structural design optimization, safety engineering, asset reliability, and digital transformation technologies for the next generation of offshore energy projects.

Programme Curriculum

Offshore Structural Engineering Training Course

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Course Duration

5 days

Course Objectives

1. Develop advanced understanding of offshore structural engineering principles and marine design practices.
2. Master offshore platform design, structural analysis, and engineering optimization techniques.
3. Understand hydrodynamic loads, wave theories, wind forces, and environmental loading conditions.
4. Apply finite element analysis (FEA) and structural simulation methodologies for offshore applications.
5. Gain expertise in fatigue analysis, fracture mechanics, and structural integrity management.
6. Learn international offshore standards including API, ISO, DNV, and ABS design requirements.
7. Develop skills in fixed platform, floating structure, FPSO, and offshore wind foundation design.
8. Understand digital engineering, BIM integration, and offshore asset digital twin technologies.
9. Improve knowledge of risk assessment, reliability engineering, and safety management systems.
10. Learn advanced concepts in subsea structures, risers, pipelines, and marine systems engineering.
11. Apply sustainable engineering approaches for offshore renewable energy projects.
12. Develop capability in offshore project management, lifecycle engineering, and maintenance strategies.
13. Enhance professional readiness for global offshore energy and marine engineering careers.

Target Audience

1. Offshore Structural Engineers and Marine Engineers
2. Civil and Mechanical Engineers working in offshore industries
3. Oil & Gas Engineering Professionals
4. Offshore Wind Energy Professionals
5. Structural Design Engineers and Consultants
6. Project Engineers and Offshore Project Managers
7. Engineering Graduates and Postgraduate Students
8. Asset Integrity, Inspection, and Maintenance Professionals

Course Modules

Module 1: Fundamentals of Offshore Structural Engineering

- Overview of offshore structures and marine engineering applications
- Types of offshore platforms-fixed, floating, and compliant structures

- Offshore environmental conditions and design challenges
- Structural materials and construction methodologies
- Introduction to offshore engineering standards
- **Case Study:** Design evaluation of a North Sea fixed offshore platform considering environmental loading and operational requirements.

Module 2: Offshore Structural Design Principles

- Structural configuration and load path development
- Static and dynamic structural analysis techniques
- Design considerations for jackets, topsides, and decks
- Structural optimization and weight reduction strategies
- Offshore fabrication and installation requirements
- **Case Study:** Optimization of an offshore jacket structure to reduce material cost while maintaining safety performance.

Module 3: Hydrodynamic Loading and Environmental Analysis

- Wave, current, and wind loading calculations
- Marine hydrodynamics and offshore response analysis
- Extreme weather and storm condition assessment
- Seismic loading considerations for offshore structures
- Environmental design criteria and risk evaluation
- **Case Study:** Assessment of hurricane-induced wave loading on a Gulf of Mexico offshore platform.

Module 4: Structural Analysis and Finite Element Modeling

- Fundamentals of finite element analysis (FEA)
- Structural modeling techniques for offshore applications
- Stress analysis and deformation evaluation
- Nonlinear analysis and advanced simulation methods
- Interpretation of engineering analysis results
- **Case Study:** FEA-based fatigue assessment of an offshore platform connection joint.

Module 5: Fatigue Analysis and Structural Integrity Management

- Fatigue mechanisms in offshore structures
- S-N curve analysis and fatigue life prediction
- Crack growth monitoring and inspection strategies
- Risk-based inspection (RBI) methodologies
- Offshore asset lifecycle management
- **Case Study:** Fatigue life extension study for an aging offshore production platform.

Module 6: Floating Structures, FPSO, and Offshore Renewable Systems

- Floating production storage and offloading (FPSO) systems
- Semi-submersibles and floating platforms
- Offshore wind turbine foundations
- Floating wind technology developments
- Stability and motion response analysis
- **Case Study:** Structural assessment of a floating offshore wind platform for deep-water deployment.

Module 7: Subsea Structures, Risers, and Marine Systems

- Subsea engineering fundamentals
- Riser design and dynamic behavior
- Offshore pipeline structural considerations
- Subsea equipment support structures
- Installation and operational challenges
- **Case Study:** Dynamic analysis of a deep-water riser system under current-induced vibration.

Module 8: Offshore Safety, Digital Engineering, and Future Trends

- Offshore safety engineering and risk management
- Digital twins and smart offshore assets
- Artificial intelligence applications in structural monitoring
- Sustainable offshore energy engineering
- Future trends in offshore engineering innovation
- **Case Study:** Implementation of digital twin technology for predictive maintenance of offshore assets.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com