Marine Infrastructure 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

Marine Infrastructure Engineering Training Course is designed to equip engineers, project managers, consultants, and technical specialists with advanced knowledge of coastal engineering, offshore structures, port development, maritime construction, sustainable marine technologies, and resilient infrastructure design. The course focuses on the latest industry trends, including climate-resilient marine infrastructure, digital engineering, smart ports, offshore renewable energy systems, blue economy development, AI-driven project optimization, and advanced construction methodologies. Participants will gain practical expertise in planning, designing, constructing, and managing complex marine infrastructure projects while applying international engineering standards and best practices.

With increasing global demand for sustainable coastal protection, offshore energy expansion, intelligent transportation networks, and climate adaptation solutions, marine infrastructure professionals must develop cutting-edge technical and strategic capabilities. This training integrates real-world case studies, engineering simulations, project-based learning, risk assessment techniques, and innovative digital tools to prepare professionals for emerging challenges in the maritime sector. Participants will explore successful projects from global ports, offshore platforms, coastal defense systems, and marine transportation developments.

Programme Curriculum

Marine Infrastructure Engineering Training Course

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smart ports, offshore renewable energy systems, blue economy development, AI-driven project optimization, and advanced construction methodologies. Participants will gain practical expertise in planning, designing, constructing, and managing complex marine infrastructure projects while applying international engineering standards and best practices.

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5 days

Course Objectives

1. Develop advanced knowledge of marine infrastructure planning, design, and engineering principles.
2. Understand modern coastal engineering strategies and climate adaptation technologies.
3. Master offshore structure design, analysis, and construction techniques.
4. Learn innovative approaches for smart port development and maritime digital transformation.
5. Apply sustainable engineering practices and blue economy principles in marine projects.
6. Enhance skills in marine geotechnical engineering and seabed investigation methods.
7. Understand advanced hydrodynamic modeling and wave impact analysis.
8. Develop expertise in marine construction management and project execution strategies.
9. Learn effective risk management, safety engineering, and environmental compliance frameworks.
10. Explore applications of Artificial Intelligence (AI), BIM, IoT, and digital twins in marine infrastructure.
11. Improve capabilities in offshore renewable energy infrastructure development.
12. Analyze global trends in resilient coastal infrastructure and sustainable maritime systems.
13. Build leadership skills for managing large-scale international marine engineering projects.

Target Audience

1. Civil and Marine Engineers
2. Coastal and Offshore Engineering Professionals
3. Port and Harbor Development Specialists
4. Construction Project Managers
5. Infrastructure Consultants and Designers
6. Environmental and Sustainability Professionals
7. Government Maritime Authorities and Regulators
8. Energy, Shipping, and Offshore Industry Professionals

Course Modules

Module 1: Fundamentals of Marine Infrastructure Engineering

- Principles of marine engineering systems and infrastructure development
- Overview of ports, harbors, offshore structures, and coastal facilities
- Marine project lifecycle-feasibility, design, construction, and operation
- International standards for marine infrastructure projects

- Introduction to emerging smart maritime technologies
- Case Study: Development of the Port of Rotterdam Smart Port Infrastructure, focusing on automation, sustainability, and digital transformation.

Module 2: Coastal Engineering and Climate-Resilient Infrastructure

- Coastal processes, erosion control, and shoreline management
- Wave dynamics, tides, currents, and sediment transport analysis
- Design of seawalls, breakwaters, and coastal protection systems
- Climate change adaptation strategies for coastal cities
- Nature-based solutions for resilient coastal development
- **Case Study:** The **Netherlands Delta Works**, demonstrating advanced flood protection and climate resilience engineering.

Module 3: Offshore Structures Engineering

- Design principles of offshore platforms and marine structures
- Fixed, floating, and hybrid offshore systems
- Structural loading, fatigue analysis, and reliability engineering
- Offshore wind foundation technologies
- Advanced materials for marine environments
- **Case Study:** Offshore wind farm developments in the **North Sea**, integrating renewable energy infrastructure and marine engineering innovation.

Module 4: Port, Harbor, and Maritime Transportation Infrastructure

- Modern port planning and terminal design
- Container terminals and logistics optimization
- Smart ports and automated cargo handling systems
- Navigation channels, dredging, and harbor operations
- Sustainable maritime transportation infrastructure
- **Case Study: Port of Singapore**, highlighting automation, digital operations, and sustainable port management.

Module 5: Marine Geotechnical Engineering and Foundation Systems

- Offshore soil investigation and seabed characterization
- Marine foundation design principles
- Pile foundations, caissons, and gravity-based structures
- Ground improvement techniques in marine environments
- Geotechnical risk assessment and monitoring
- **Case Study:** Large-scale offshore wind foundation projects using advanced seabed engineering techniques.

Module 6: Marine Construction Management and Project Delivery

- Marine construction planning and execution strategies
- Heavy lifting, marine equipment, and offshore logistics
- Contract management and procurement strategies
- Cost optimization and schedule control
- Health, safety, and environmental (HSE) management

- **Case Study:** Major offshore construction projects using integrated project management and digital monitoring systems.

Module 7: Digital Transformation in Marine Engineering

- Building Information Modeling (BIM) for marine projects
- Digital twins and smart infrastructure monitoring
- Artificial Intelligence (AI) applications in engineering
- Internet of Things (IoT)-enabled marine asset management
- Data analytics for predictive maintenance
- **Case Study:** Smart infrastructure monitoring systems implemented in advanced global port facilities.

Module 8: Sustainable Marine Infrastructure and Future Trends

- Green marine engineering and sustainable construction
- Offshore renewable energy infrastructure
- Carbon-neutral ports and maritime decarbonization
- Circular economy approaches in marine projects
- Future innovations in ocean engineering
- **Case Study:** Global offshore renewable energy projects supporting the transition toward clean energy systems.

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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