Fundamentals of Sea Port Construction and Engineering

23 – 27 August 2027
Prague (Czech)



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Why This Course

The maritime industry is experiencing rapid growth and transformation, with ports serving as critical hubs for global trade. To design, build, and maintain efficient and sustainable port infrastructure, professionals need a thorough understanding of engineering principles, construction techniques, and operational management.

This intensive 1-week course equips participants with a comprehensive foundation in port engineering, combining theory with practical insights. Attendees gain the skills to plan, design, construct, and maintain port facilities while addressing environmental, operational, and technological considerations.

What You'll Learn and Practice

By participating in this course, you will:

- Understand port planning principles and develop effective master plans.
- Master design considerations for port structures, terminals, and utilities.
- Explore construction methods tailored to marine environments.
- Gain expertise in port maintenance, asset management, and environmental stewardship.
- Develop project management and risk assessment skills for port infrastructure projects.
- Acquire practical knowledge to implement emerging technologies in port operations.

The Program Flow

Day 1: Introduction to Port Engineering and Planning

- Overview of port types, functions, and components
- Port master planning and site selection
- Economic and environmental considerations
- Shipping trends and vessel characteristics

Day 2: Port Design and Layout

- Breakwater and coastal protection structures
- Navigation channels and harbor basins
- Berth and terminal design
- Port utilities and services



Day 3: Marine Structures and Construction Techniques

- Quay walls and jetties
- Piling and foundation systems
- Dredging and land reclamation
- Construction materials for marine environments

Day 4: Port Infrastructure and Equipment

- Cargo handling systems and equipment
- Storage facilities and warehouses
- Port access and hinterland connections
- Marine aids to navigation

Day 5: Port Maintenance, Operations, and Future Trends

- Asset management and maintenance strategies
- Environmental management and sustainability
- Port security and safety
- Emerging technologies and future developments in port engineering

Individual Impact

- Build confidence in contributing to port planning and design projects.
- Enhance practical knowledge of construction techniques in challenging marine environments.
- Develop skills in managing port assets and infrastructure effectively.

Work Impact

- Support the development of safe, efficient, and sustainable port facilities.
- Optimize operations and maintenance strategies for port infrastructure.
- Integrate environmental and technological considerations into port development projects.
- Contribute to projects that meet regulatory, operational, and economic objectives.

Training Methodology

The course uses a mix of theoretical and practical approaches to ensure real-world application:

- Interactive lectures and technical discussions on port engineering principles.
- Case studies highlighting successful port design and construction projects.
- Hands-on exercises in planning, design assessment, and infrastructure optimization.
- Group workshops to simulate project management and problem-solving scenarios.



Beyond the Course

Participants will leave with:

- The ability to contribute effectively to port master planning, design, and construction projects.
- Skills to maintain and optimize port infrastructure with a focus on safety and sustainability.
- Awareness of emerging technologies and trends shaping the future of port engineering.
- Practical tools and frameworks to apply knowledge immediately in professional settings.

