MERCURY

Marine Engineering Course

18 – 22 January 2027
Rome (Italy)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

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Ref: 16196_1010311 **Date:** 18 – 22 January 2027 **Location:** Rome (Italy) **Fees:** 7200 Euro

Introduction:

The Marine Engineering course offers a comprehensive foundation in the technical, mechanical, and operational aspects of marine propulsion and systems. As the maritime industry expands and modernizes, the need for highly skilled marine engineers is growing globally.

This Marine Engineering program provides participants with up-to-date knowledge of ship machinery systems, maintenance protocols, safety standards, and engineering best practices. Participants will gain practical skills in diagnosing and resolving mechanical faults, understanding propulsion systems, and managing onboard machinery operations.

Through this Marine Engineering training, learners will develop the technical proficiency and problem-solving abilities required in the marine environment. It emphasizes hands-on application, regulatory compliance, and the effective integration of marine systems. It bridges the gap between academic theory and real-world challenges in marine engineering.

Targeted Groups:

This Marine Engineering training targets professionals seeking specialized knowledge and skills:

- Marine engineers at entry or intermediate levels.
- Shipboard technical officers and engine room crew.
- Naval architecture graduates are aiming to specialize in systems engineering.
- Technical supervisors and maritime operations staff.
- Port engineers and shipyard maintenance personnel.
- Safety and compliance officers in shipping companies.
- Marine systems inspectors and auditors.
- Engineering professionals transitioning to marine roles.
- Naval cadets and maritime academy graduates.
- Marine technicians work on offshore platforms or vessels.

Targeted Competencies:

Participants will gain the following competencies during the Marine Engineering program:

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- Technical proficiency in shipboard mechanical systems.
- Analytical skills in troubleshooting and diagnostics.
- Decision-making under operational constraints.
- Familiarity with propulsion and auxiliary systems.
- Safety and Regulatory Compliance in Engineering Tasks.
- Preventive maintenance planning and implementation.
- Use of marine-specific engineering tools and software.
- Communication skills within marine technical teams.
- Application of Environmental Standards in Marine Systems.
- Team coordination during machinery operations and emergencies.

Course Objectives:

Participants will achieve the following objectives by completing the Marine Engineering course:

- Understand core principles of marine propulsion and machinery systems.
- Identify the components of the main and auxiliary engines.
- Apply mechanical and thermodynamic principles in marine systems.
- Analyze equipment performance for maintenance and diagnostics.
- Evaluate fuel systems, control systems, and automation components.
- Operate and troubleshoot steering gear and power transmission systems.
- Demonstrate compliance with international marine safety regulations.
- Interpret engineering drawings and ship machinery schematics.
- Plan and execute preventive maintenance schedules.
- Monitor engine performance using technical parameters.
- Maintain and optimize HVAC and refrigeration systems on ships.
- Communicate technical findings using professional terminology.
- Solve real-time engineering issues through a structured methodology.
- Manage onboard energy systems for efficiency and sustainability.
- Enhance decision-making in shipboard engineering operations.

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Course Content:

Unit 1: Fundamentals of Marine Engineering:

- Introduction to marine engineering systems and roles.
- Overview of propulsion systems: diesel, steam, and hybrid engines.
- Thermodynamics and fluid mechanics applied to marine engines.
- Main engine functions and construction elements.
- Types and configurations of auxiliary engines.
- Power transmission systems and shaft alignment.
- Steering systems: hydraulic and electric operations.
- Introduction to onboard mechanical automation systems.
- International conventions IMO, SOLAS, MARPOL impacting marine systems.

Unit 2: Marine Machinery and System Operations:

- Structure and function of engine room equipment.
- Operation and maintenance of fuel oil systems.
- Lubrication Systems: Types, Selection, and Monitoring.
- Freshwater cooling and seawater cooling systems.
- Boiler Systems: Operation, Maintenance, and Safety.
- Air compressors and compressed air systems on ships.
- Bilge and ballast pumping systems.
- Overview of HVAC and refrigeration systems.
- Automation and Monitoring in Engine Room Control Systems.

Unit 3: Electrical and Power Systems at Sea:

- Marine electrical systems fundamentals.
- Generators and alternators are used on vessels.
- Distribution systems and switchboard operations.
- Emergency power systems and UPS integration.
- Battery Systems: Charging, Maintenance, and Use.
- Protection and grounding of marine electrical systems.
- Motor operation and control mechanisms.
- Troubleshooting common marine electrical faults.
- Electrical safety protocols and standards.

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Unit 4: Marine Maintenance, Safety, and Compliance:

- Preventive maintenance planning and best practices.
- Engine overhauls and machinery inspection techniques.
- Safety procedures for hazardous engine room operations.
- Emergency shutdown systems and alarms.
- Maintenance record keeping and documentation.
- International marine maintenance regulations and audits.
- Risk assessments for engine room tasks.
- Condition monitoring and vibration analysis tools.
- Preparing for classification society inspections.

Unit 5: Advanced Topics and Emerging Trends in Marine Engineering:

- Green technologies and low-emission engines.
- LNG and dual-fuel propulsion systems.
- Hybrid marine propulsion systems and electric drives.
- Waste heat recovery systems on ships.
- Real-time monitoring and predictive maintenance software.
- Integration of automation and smart sensors.
- AI applications in fault detection and energy efficiency.
- Energy management systems for marine operations.
- Career pathways and certifications in marine engineering.

Final Insights & Key Takeaways:

The Marine Engineering course empowers participants with in-depth technical knowledge and practical skills for shipboard engineering excellence. Learners gain a solid understanding of machinery systems, safety practices, and maintenance protocols. The content aligns with the latest industry standards and technological advancements. They will support the operational efficiency and sustainability of modern maritime systems.