

## Marine Engineering Fundamentals

Delivery Method: eLearning || Duration: 5 hours || Course Fee: 480 €

Category: Naval Architecture & Marine Engineering

Available languages: English

### Certificate

On completion of the training program, the student will be awarded:

- A Certificate of **Marine Engineering Fundamentals**, issued by Bureau Veritas Solutions Marine & Offshore.

The Certificate of **Marine Engineering Fundamentals** is obtained after completing the course and passing the online test.

### Presentation

This training course provides a general introduction to ship machinery, details of diesel engines, a description of piping systems in ship's engine rooms and an overview of marine auxiliary machinery such as pumps, compressors, purifiers, heat exchangers, etc.

### Who the course is for

The course **Marine Engineering Fundamentals** is aimed at anyone interested in getting familiar with marine engineering, diesel engines, marine auxiliary machinery and engine room piping systems. This may include Ship Managers, Technical Superintendents, Ship Masters, Officers and Seafarers; Shipyards Technical Staff; Surveyors; P&I and/or Insurance Inspectors; Naval Architects; Etc.

### Objectives

On completion of the training, students will be able to:

- Know the different types and arrangements of ship machinery applied for ship propulsion, understand the main parameters of ship machinery and the basic propulsion power transmission principles, and know the conceptual requirements for reliable and safe work of ship propulsion.
- Know the main parts of marine diesel engines and understand their functions, get familiar with the most common problems involving engine parts, and understand the basic requirements for the reliable and safe operation of diesel engines.
- Know the different types of piping systems in the ships engine room, understand the purpose and the basic arrangement of systems.
- Know the different types of auxiliary machinery found on board ships, understand their working principles and the basic requirements for reliable and safe work of auxiliary machinery.

## Program

### Module 1 – Ship Machinery

- Overview of the different propulsion types: Low-speed diesel engine layout, medium-speed diesel engine layout, steam propulsion with HP and LP steam turbines, gas turbines propulsion, diesel-electric propulsion, combined layouts, dual fuel engines, nuclear propulsion plants
- Diesel engines outline
- High pressure and low-pressure steam turbines
- Gas turbine cycles

### Module 2 – Engine Details

- Cylinder heads
- Cylinder liners
- Pistons
- Crosshead and connecting rods
- Bearings
- Crankshaft
- Engine casing
- Turbocharger

### Module 3 – Engine Room Systems

- Seawater system
- Freshwater system
- Fuel oil system
- Lubricating oil system
- Compressed air system
- Exhaust system

### Module 4 – Marine Auxiliary Machinery

- Pumps: Centrifugal pumps, positive displacement pumps, reciprocating pumps
- Separators
- Heat exchangers
- Air compressors and air receivers
- Steering gear
- Reduction gears
- Shaft generator
- Thrust bearing
- Controllable pitch propeller