

Marin Engineering

Titles

Page

- **Bunkering Procedures** 2
- **Electrical and Control Engineering** 3
- **Hull Inspections** 4
- **Marine Mechanical Engineering (Basics)** 5
- **Metallurgy and Welding for Marine Applications** 6
- **Risk Management Awareness in the Marine Industry** 7

Bunkering Procedures

Course Introduction:

The cost of Bunkering is 50 % approximately the cost of fuel and has to be correctly executed to save none necessary overpayments of Bunkers. Why because of the Heat Expansion of Fuel Oils. Bunkering needs to be done by competent staff efficiently to keep cost down. This course will explain and demonstrate how this can be achieved.

Course Objectives:

The Participants will learn how to Bunker a vessel in accordance with the International Environmental Safety Agreements, this will include the following Objectives:

- Safety Precautions
- Administrative Precautions
- Opening Soundings
- Bunkering Methods and Techniques

Course Duration: This is a five-day course.

Course Outline:

- Safety Precautions
- Administrative Precautions
- Opening Soundings and Calculations
- Bunkering Techniques
- Slow Down and Change Over
- Final Soundings and Calculations
- Bunkering Sampling
- Final Administrative Documentation

Who Should Attend:

Marine Engineers ands Marine Officers and all Marine Staff involved in Bunkering parties.

Electrical and Control Engineering

Course Introduction:

Modern ships are increasingly dependent upon the electrical and control engineering installations for their operation. There is also greater use and reliance on complex computer-based systems. It is therefore essential that sea-going and shore-based staff have a good appreciation of such systems, ensuring that they are maintained in an efficient operational and safe condition.

Course Duration: This a five-day course.

Course Outline:

- Electrical engineering installations new, existing and modified installations and manufacturers' works
- Electrical equipment in hazardous areas
- Control engineering surveys, covering:
 - Control engineering systems
 - New, existing and modified installations
 - Manufacturers' works
- Client and surveyor relationships

Who Should Attend:

Marine engineers involved with electrical, control and software-based systems and equipment in marine applications and those with an appreciation of the fundamentals of electrical and control engineering.

Hull Inspections

(Prevention, detection and repair of defects and damage and Assessing damage and defects effectively)

Course Introduction:

Identifying defects and damage to ship structures can often be difficult, and deciding if a repair is required is not always obvious. This course will equip you with reliable inspection techniques used by Lloyd's Register surveyors worldwide.

Course Objectives:

Participants learn how to identify different types of damage and defects using practical examples and case studies, and gain an understanding of their causes.

Upon successful completion of the course, the participants will:

- understand the classification and statutory requirements for hull structural integrity
- understand the requirements for maintenance of class
- understand the need for and the execution of thickness measurements
- understand the role played by coatings and anodes
- be able to quantify coatings and anodes breakdown
- know the difference between various grades of material
- understand the basic structural concepts of a ship's hull
- appreciate the process of fatigue defects
- know how to inspect structure for damage and defects using specific tried-and- tested techniques
- be able to identify specific types of defects and damage and understand their causes
- be able to discuss repair techniques with confidence
- know different repair techniques for specific defects and damage to prevent re-occurrence.

Who Should Attend:

Anyone who carries out inspections of hull structures including:

- superintendents & masters
- first officers



- chief engineers
- shipyard personnel and independent surveyors

Marine Mechanical Engineering (Basics)

Course Introduction:

The Marine Mechanical Engineer is required to be versatile and to be the master of the basics of his craft to provide an effective service. This requires intense development of his skills and accuracy for his industry. This basic course has been designed with this in mind and covers the essentials required for Marine Mechanical Engineering.

Course Duration: Five Days

Course Objectives:

This course is designed to give the participants the skills and knowledge and:

The necessary Mechanical Knowledge for basic understanding in Marine Engineering and to be able to take an active part in any maintenance and repair work on board a vessel.

The participants will be awarded on completion a Certificate of Achievement in Basic Marine Mechanics

Course Outline:

- Basic Bench Work
- Basic Gas and Electrical Welding
- Basic Lathe Operating
- Basic Tool Machine Operations
- Simulated repair on demonstrating objects

Course Supporting Techniques:

Detailed Manuals will given to students for further study and for use in the workplace.

Who Should Attend:

Potential Marine Engineering and those involved with Basics of Marine Engineering Skills.

Metallurgy and Welding for Marine Applications

Course Introduction:

This five-day technical course will introduce metallurgy, welding technology and non-destructive examination methods related to marine construction. The course covers the inspection and testing of materials and includes the basics of rolling, forging and casting technologies.

This course has been developed to introduce the essential metallurgical aspects of the most commonly used materials. The product forms of plate, forgings and castings are covered. Materials discussed include copper and aluminium alloys, carbon and stainless steels. The effects of corrosion in the marine environment are addressed. Welding is widely used for joining marine materials and it is important to understand how the welding processes affect the properties and quality of the resultant welds.

Course Outline:

- learn about metallurgy and the various product forms
- appreciate the differences between material manufacturing techniques
- gain awareness of material defects, their significance, detection and their avoidance along with repair techniques
- learn about marine corrosion of materials
- appreciate how the welding processes affect the weld and heat affected zone properties
- learn about the factors to be considered for weld repair
- understand the advantages and limitations of fusion welding
- appreciate the non-destructive examination techniques that may be applied to materials and welds.

Who Should Attend:

Anybody who needs an awareness of material properties and welding fundamentals but whose work is unlikely to include actual inspections of components.



Anyone having some previous NDE experience, but without the required background knowledge of materials and welding.

Risk Management Awareness in the Marine Industry

Course Introduction:

Risk management is a term often heard in modern business, but few people have a clear understanding of exactly what it involves. This course aims to raise awareness of the concepts of risk management in the Marine Industry and the way that these concepts can be utilised to business advantage.

We are all aware that there are certain risks in life that have to be faced and managed appropriately. After all, the ability to manage your exposure to risk results in eventual commercial success or failure. This course will help you to understand the typical risks that can be experienced. It also includes methods of identifying how severe the risks may be, ranking of risk importance, and the introduction of measures that will lower the risks.

Course Duration: Five Days

Course Outline:

- equipment failure due to poor maintenance, causing injury to crew
- repeated failure of machinery causing commercial loss
- inappropriate ship design resulting in difficulty during emergency evacuation, and injury to passengers
- accidental discharge of pollutants because of crew fatigue, resulting in damage to the environment
- loss of reputation in the marketplace from repeated incidents
- inefficient use of resources leading to commercial loss.

The course will also give participants the opportunity to use various risk management tools and techniques to assess and manage risk in both historic and predictive maritime incident scenarios.



Above all, it will emphasise the need for a proactive approach to risk management resulting in suitable control of the issues. The risk management tools and techniques discussed include:

- risk criteria – matrices and ALARP
- hazard identification (HAZOP, SWIFT etc.)
- risk consequence and likelihood evaluation
- integrated risk management systems.

Course Supporting Techniques:

The course will not focus on a detailed understanding of how to carry out such techniques. Instead these techniques will be used to demonstrate how risks can be potentially assessed and managed. The aim is for delegates to increase their awareness of the concepts so that they can use them when developing their own approach to the management of their risks. The course is seminar/ group workshop based and includes numerous practical exercises

Who Should Attend:

- Everyone whose duties involve assessing and managing their company's risk.
- Those who need to understand and participate in the decision-making processes that affect their day-to-day and long-term operations.