WEB-BASED TRAINING

eLearning Solutions for Marine and Offshore Professionals

ABS Academy
ABS Academy® training courses are used by many of the industry’s leading shipowners to enhance the operational safety and performance of their assets.

ABS Academy is committed to being your training partner. This commitment means providing courses that extend beyond the traditional curriculum and present you with training solutions to address your needs.

Designed to meet the technical and management needs of shipowners, managers, and operators of marine and offshore assets, ABS Academy’s targeted training features best practice applications for design and operations.

TECHNICALLY TRAINED EMPLOYEES ARE MORE LIKELY TO HAVE THE CONFIDENCE AND NECESSARY SKILLS TO PERFORM THEIR WORK AT A HIGH LEVEL.

ABS MISSION

The mission of ABS is to serve the public interest as well as the needs of our members and clients by promoting the security of life and property and preserving the natural environment.
TRAINING AT-A-GLANCE

With a rich history of marine and offshore technical expertise spanning more than 160 years, ABS offers an extensive portfolio of web-based learning solutions.

The purpose of employee learning and development is a new and higher level of performance that supports an organization’s mission objectives and improves business outcomes.

ABS has developed a library of web-based training curricula that cover technical concepts, operational issues, and classification and regulatory requirements for marine and offshore organizations, including principles related to marine engineering and naval architecture.

ABS offers subscription-based pricing for web-based training tracks specifically geared to marine or offshore new construction. Clients can also select curricula from our web-based training library to suit their specific learning needs.

For more information, contact your nearest ABS Academy®.

AN ORGANIZATION’S ABILITY TO LEARN AND TRANSLATE LEARNING INTO ACTION IS THE ULTIMATE COMPETITIVE ADVANTAGE.
WEB-BASED TRAINING

ABS Academy® web-based training curricula that cover technical concepts, operational issues, and classification and regulatory requirements for marine and offshore organizations, including principles related to marine engineering and naval architecture.

With web-based training, geographic boundaries don’t exist. Training material can be accessed at any time and completed or referenced from nearly any location.

Web-based training is more cost-effective than classroom training. Fewer training days are required to complete the same content, as the same material in a classroom could take weeks rather than hours. The material is more consistent with web-based training, as users receive exactly the same information.

In addition, web-based training is easily scalable, allowing a large number of people to complete courses in a matter of hours.

WEB-BASED TRAINING ALLOWS USERS TO LEARN AT THEIR OWN PACE, AT A TIME THAT IS CONVENIENT.

ABS Academy offers subscription-based pricing for web-based training tracks specifically geared to marine or offshore new construction. Clients can also select curricula from our web-based training library to suit their specific learning needs.

Company-wide access to the courses is available for one calendar year.
MAIN ELECTRIC POWER
(Duration: 8 hours)
• Electrical System Overview
• Power Distribution 1
• Power Distribution 2
• Transformers, Converters, and Shore Connection
• Typical Failures, Procedures, and Ship Requirements

ABS-CLASSED VESSELS: OIL TANKERS
(Duration: 2 hours)
• Oil Tankers: Overview
• Types, Classification, and Regulatory Aspects
• Structural Characteristics, Cargo Handling, and Safety Hazards
• Propulsion, Steering, Equipment, and Systems

HAZARDOUS AREAS
(Duration: 8 hours)
• Hazardous Areas 1
• Hazardous Areas 2
• Hazardous Areas 3

NONDESTRUCTIVE EVALUATION
(Duration: 7 hours)
• Nondestructive Test Certification
• Liquid Penetrant Testing
• Magnetic Particle Inspection Testing
• Ultrasonic Inspection Testing
• Radiography

COMMON ENGINEERING PRINCIPLES AND PRACTICES
(Duration: 11.5 hours)
• Naval Architecture 1
• Naval Architecture 2
• Marine Engineering 1
• Marine Engineering 2

BLUEPRINT READING AND INTERPRETATION
(Duration: 4 hours)
• Drawing Nomenclature
• Vessel Structures
• Hull Design Drawings
• Machinery Drawings
• Electrical Drawings
• Piping Drawings
• Outfitting Drawings
METALLURGY OF STEEL
(Duration: 3.5 hours)
• Crystalline Structures and Chemistry
• Microstructures
• Heat Treatment
• Mechanical Properties

MATERIALS TESTING
(Duration: 4 hours)
• Tension Testing
• Impact and CTOD Testing
• Fatigue and Bend Testing
• Hardness Testing
• Other Tests

CARBON STEELS
(Duration: 5 hours)
• Chemistry and Categorization
• Manufacturing Process
• Ordinary and Higher Strength Steel
• ABS Special Grade Steels
• Non-ABS Grade Steels
• Pipes, Tubes, and Tubular Structures

STEEL CASTINGS
(Duration: 2.5 hours)
• Steel Hull and Machinery Castings
• Examination, Repairs, and Marking
• Ductile and Gray Iron Castings

STEEL FORGINGS
(Duration: 3.5 hours)
• Carbon Steel Forgings
• Forging Defects
• Material Characteristics of Forgings

NONMETALLIC MATERIALS
(Duration: 4.5 hours)
• Introduction to Nonmetallic Materials
• Laminate Composites From Fiber-Reinforced Plastics
• Laminate Components
• Laminate Properties and Tests
• Glass for Marine Applications
QUALIFIED WELDING INSPECTOR  
(Duration: 16 hours)  
• Material Types and Casting Discontinuities  
• Material Properties, Characteristics, and Tests  
• Basic Welding Metallurgy  
• Weld Joint Geometry and Welding Terminology  
• Weld Symbol Types and Test Symbol Types  
• Welding Processes  
• Welding Discontinuities and Repairs  
• Welding Procedure Specification  
• Welding Procedure Qualification  
• Welder Performance Qualification  
• Welding Stress Control  

ELECTRICAL SYSTEMS  
(Duration: 14 hours)  
• Basic Electrical Theory and Principles  
• Applied Electrical Concepts  
• Load Analysis  
• Loads, Rating, and Earthing  
• Short Circuits  
• Protective Devices  
• Transformers  
• Rotating Machines: Installation, Testing, and Protection  
• Rotating Machines: Factory Tests  
• Rotating Machines: Certification  
• Switchboards and Shore Connections  
• Motor Control Centers and Motor Controllers  
• Electrical Cable Testing and Certification Requirements  
• Electrical Cable Construction  
• Cable Installations I  
• Cable Installations II  
• Emergency Generator and Lighting  
• Battery System
WEB-BASED TRAINING LISTING

SOLAS ELECTRICAL SYSTEMS
(Duration: 15 hours)
• Navigation System
• Fire Detection and Alarm Systems

AUTOMATION SYSTEMS
(Duration: 275 hours)
• Monitoring and Alarm, Slowdown, and Shutdown Systems
• Communication Systems
• Computer-Based Systems I
• Computer-Based Systems II

PIPING SYSTEMS: GENERAL
(Duration: 13.5 hours)
• General Piping
• Piping System Components
• Basic Piping Design Requirements
• Piping Installation Requirements
• Specific Piping Material

PORT STATE CONTROL
(Duration: 6.5 hours)
• Introduction to Port State Control
• External Hull and Statutory Document Deficiencies
• Navigation Bridge and Hull Deficiencies
• Machinery Space Deficiencies
• Lifesaving Appliances, Ventilation Systems, and Firefighting Deficiencies
• Post-Detention

THICKNESS MEASUREMENTS FOR VESSELS
(Duration: 6.5 hours)
• Thickness Measurement Concepts and Tools
• General Thickness Measurement Process
• Substantial Corrosion
• Vessel Thickness Measurements
MODU OVERVIEW
(Duration: 3 hours)
- Introduction to MODUs
- Self-Elevating Drilling Units
- Surface-Type Drilling Units
- Column-Stabilized Drilling Units

BASIC DRILLING AND WELL CONTROL
(Duration: 5.25 hours)
- Basic Petroleum Geology and Exploration
- Basic Offshore Drilling
- Basic Offshore Well Construction
- Basic Offshore Well Completion
- Basic Offshore Well Pressure Control
- Onboard Mud Circulation Systems
- Secondary Well Control

THICKNESS MEASUREMENTS FOR OFFSHORE UNITS
(Duration: 6.5 hours)
- Thickness Measurement Concepts and Tools
- General Thickness Measurement Process
- Substantial Corrosion
- Offshore Unit Thickness Measurements

MODU ELECTRICAL SYSTEMS
(Duration: 4 hours)
- MODU Electrical Systems 1
- MODU Electrical Systems 2

MODU PIPING SYSTEMS
(Duration: 6 hours)
- MODU Piping Systems 1
- MODU Piping Systems 2
- MODU Piping Systems 3
OFFSHORE EMERGENCY SHUTDOWN (ESD) SYSTEMS
(Duration: 3 hours)

- Emergency Shutdown Systems: Purpose
- How Emergency Shutdown Systems Operate
- Emergency Shutdown Systems: Components
- Emergency Shutdown Systems: Trigger Conditions
- Systems and Equipment Affected by Emergency Shutdown System
- Verify Effective Operation of Emergency Shutdown Systems

OFFSHORE PRODUCTION INSTALLATIONS
(Duration: 6.25 hours)

- Offshore Production Installations: Introduction
- Classification and Statutory Regulations
- Mooring Systems
- Mooring Line Components and Foundations
- Mooring Equipment, Turrets, and Buoys
- Oil and Gas Production
- LNG Production
- Import and Export Systems
- Subsea Production Systems

MULTI-CABLE TRANSIT SYSTEMS
(Duration: 15 hours)

- Multi-Cable Transit Systems: System Types
- Multi-Cable Transit Systems: Installations, Repairs, and Maintenance
- Multi-Cable Transit Systems: Millionaire Challenge

SHAFT ALIGNMENT
(Duration: 20.5 hours)

- Fundamentals
- Survey Preparation
- Procedures
- Sighting Methods
- Pre-Sighting and Stern Tube Bore Sighting
- Final Sighting of the Stern Tube
- Tail Shaft Clearance Measurements
- Sag and Gap Measurements
- Bearing Reaction Measurements: Part 1
- Bearing Reaction Measurements: Part 2
- Bearing Reaction Measurements: Part 3
- Main Engine Installation and Gear Tooth Contact
- Sea Trials
- Sea Trials: Scenario 1
- Sea Trials: Scenario 2
GAS CARRIERS
(Duration: 29 hours)

- Welcome
- Terms and Conditions Flip Card Activity
- Introduction to Natural Gas
- The Science Behind Natural Gas
- Natural Gas Value Chains and Supporting Technologies
- Ships Carrying Liquefied Gases
- Cargo Hazards
- Ship Survival Capabilities
- Surveys and Certificate of Fitness
- Cargo Containment Systems Overview
- Design Requirements
- Safety Systems
- Type A Cargo Containment System
- Type B Cargo Containment System
- Type C Cargo Containment System
- GTT NO 96 Membrane Cargo Containment System
- GTT Mark III Membrane Cargo Containment System
- Gas Trials and Initial Surveys
- Automation for Gas Carriers
- Cargo Control Rooms
- Cargo Handling Operations
- Cargo Piping and Valves
- Cargo Pumps and Compressors
- Electrical Equipment in Gas Dangerous Spaces
- Gas Detection Systems
- Heat Exchangers
- Inert Gas and Nitrogen Systems
- Liquid Level Measurements
- Pressure and Temperature Monitoring
- Pressure Control
CYBERSECURITY FOR AUDITORS  
(Duration: 6 hours)  
• Introduction to Cybersecurity  
• Cybersecurity Basics  
• Cyber Risk Management: Approach  
• Cyber Risk Management: Threats  
• Cyber Risk Management: Vulnerabilities  
• Cyber Risk Management: Consequences  
• Cyber Risk Management: Threats, Vulnerabilities, and Consequences Activity  
• Cyber Risk Management: Control Measures  
• Cyber Risk Management and the SMS

DECARBONIZATION  
(Duration: 3 hours)  
• Maritime Decarbonization  
• Decarbonization Solutions  
• Sustainability at ABS

STEEL VESSEL STRUCTURES  
(Duration: 10 hours)  
• Steel Vessel Basic Requirements: Introduction  
• Relevant Class Notation  
• Main Dimensions  
• Hull Structure Materials  
• Welding and Coating Requirements  
• Hull Girder Longitudinal Strength  
• Section Modulus and Moment of Inertia  
• Scantling Calculations  
• Steel Vessel Basic Requirements: Closing  
• Main Hull Structure Overview: Introduction  
• Shell Plating  
• Deck Plating: Types of Decks  
• Deck Plating: Deck and Inner Bottom Requirements  
• Bottom Structures  
• Side Structures  
• Deck Structures  
• Bulkhead Types  
• Bulkheads: Construction and Arrangements  
• Main Hull Structure Overview: Closing  
• Steel Vessel Specific and Miscellaneous Requirements: Introduction  
• Openings and Penetrations  
• Superstructures and Deckhouses  
• Opening Protection and Safety Features  
• Miscellaneous Structure Requirements  
• Structural Design Review: Lessons Learned  
• Steel Vessel Specific and Miscellaneous Requirements: Closing
MAIN ELECTRIC POWER

Learn the basic characteristics of main electrical power systems on marine vessels and offshore units, as well as ABS plan review requirements for the main electrical system arrangement.

ELECTRICAL SYSTEM OVERVIEW
This course covers the main electrical system arrangement and electrical symbols. A basic knowledge of electrical systems, associated major components, instrumentation, arrangements, and electrical symbols is required to interpret electrical drawings when evaluating electrical systems.

- Main electrical systems and their arrangement
- Principal electric symbols

POWER DISTRIBUTION 1
This course provides ABS requirements for generators, power distribution system arrangements, and power distribution system main components.

- Generators
- Power distribution system arrangements
- Power distribution system main components

POWER DISTRIBUTION 2
This course covers the requirements for cables and circuit protection systems.

- Electrical cables
- Circuit protection systems

TRANSFORMERS, CONVERTERS, AND SHORE CONNECTION
This course explains the requirements for the rating and duplication for main power transformers and converters and instrumentation for connecting to shore power.

- Main power transformers
- Main power converters
- Shore connection

TYPICAL FAILURES, PROCEDURES, AND REQUIREMENTS
This course explains typical failures, emergency shutdown procedures, requirements related to harmonics, and additional requirements related to different types of ships and offshore units.

- Typical failures related to main electrical systems
- Requirements related to general and specific emergency shutdown procedures
- Theory, effects, limits, and mitigation of harmonics
- Additional requirements related to different types of ships and offshore units

CURRICULUM DURATION: 8 HOURS
ABS-CLASSED VESSELS: OIL TANKERS

Recognize oil tankers and their operational characteristics, including typical structures, cargo handling, and safety hazards, propulsion, steering, other equipment and systems, as well as applicable classification and environmental regulations.

OIL TANKERS: OVERVIEW
This course provides an overview of oil tankers.

- Function and operations of oil tankers
- Evolution of oil tankers
- Characteristics of owners, operators, and charterers
- Major shipbuilding characteristics
- Oil trade routes

TYPES, CLASSIFICATION, AND REGULATORY ASPECTS
The course explains the main characteristics of the different types of oil tankers and the classification and basic regulatory environment specific to oil tankers.

- Compare and contrast the main characteristics of the different types of oil tankers
- Describe the classification and basic regulatory environment specific to oil tankers

STRUCTURAL CHARACTERISTICS, CARGO HANDLING, AND SAFETY HAZARDS
The course covers structural characteristics, cargo handling operations, and safety hazards for oil tankers.

- Main structural characteristics of oil tankers
- General arrangement of an oil tanker
- Typical features in the midship section
- Systems and equipment related to oil cargo handling and hazards

PROPULSION, STEERING, EQUIPMENT, AND SYSTEMS
The course explains propulsion, steering, and other typical equipment and systems used in oil tankers.

- Characteristics of propulsion and steering in oil tankers
- Typical equipment and systems for oil tankers

CURRICULUM DURATION: 2 HOURS
COMMON ENGINEERING PRINCIPLES AND PRACTICES

Recognize the basic principles and practices of naval architecture and marine engineering. The curriculum provides an overview of engineering activities, including plan approval for compliance with ABS classification requirements for marine vessels and offshore units.

NAVAL ARCHITECTURE 1
This course gives an overview of the theories behind ship design, the types of materials that are used to build ships and offshore structures, and the way ships and offshore units behave on water. Once you can recall these concepts, you will understand how vessels and offshore units are built to withstand operating conditions.

- Characteristics of ship design
- Geometry and hydrostatics of ships
- Principles of ship motion
- Properties of shipbuilding materials

NAVAL ARCHITECTURE 2
This course explains how ships are designed in order to improve strength, maneuverability, and stability.

- Characteristics of strength and structure of ships
- Characteristics of ship stability
- Characteristics of ship resistance and powering
- Principles of maneuverability and ship control
- Types of ship hazards

MARINE ENGINEERING 1
This course provides basic knowledge of the key marine propulsion systems. These concepts aid understanding of the suitability of machinery, equipment, and systems for marine and offshore applications.

- Characteristics of marine propulsion systems
- Types of ship piping systems
- Types of propulsion auxiliary piping systems
- Types of machinery outfitting equipment

MARINE ENGINEERING 2
This course provides basic knowledge of marine engineering control and safety systems and typical hazards that one may expect to find on board. These concepts aid understanding of the suitability of equipment and systems for marine and offshore applications.

- Characteristics of boilers and pressure vessels
- Types of electrical systems and automation
- Types of safety systems
- Types of ship hazards

CURRICULUM DURATION: 11.5 HOURS
HAZARDOUS AREAS

Recognize how to conduct surveys in compliance with ABS classification requirements in hazardous areas on marine vessels and offshore units.

HAZARDOUS AREAS 1
This course provides an overview of classification for hazardous areas.
- Basics of hazardous areas
- Traditional method of classifying ships
- International (IEC) method of classifying ships and MODUs
- Information indicated on hazardous area drawings

HAZARDOUS AREAS 2
This course covers electrical equipment allowed in hazardous areas on ships, the techniques used to protect electrical equipment and the electrical equipment allowed in Zones 0, 1, and 2 on ships and offshore units.
- Traditional method applies to electrical equipment on ships
- Protection techniques are used to protect electrical equipment
- International (IEC) method applies to electrical equipment on ships and MODUs

HAZARDOUS AREAS 3
This course provides basic knowledge and additional instructions related to hazardous area equipment.
- Characteristics of flammable gases
- Important characteristics of the Booklet of Equipment in Hazardous Areas
- Important information related to certification and nameplates

CURRICULUM DURATION: 8 HOURS
NONDESTRUCTIVE EVALUATION

Learn the basic details of nondestructive evaluation and testing methods and principles.

NONDESTRUCTIVE TEST CERTIFICATION
This course will provide you with a basic knowledge of common characteristics, roles, and types of certification related to nondestructive testing (NDT).
- Characteristics of the NDT certification process
- Roles and responsibilities related to the certification process
- Types of NDT certifications

LIQUID PENETRANT TESTING
This course covers requirements for liquid penetrant testing.
- Types of liquid penetrant testing
- How to perform visible liquid penetrant test (fluorescent/non-fluorescent)
- How to perform fluorescent liquid penetrant test

MAGNETIC PARTICLE INSPECTION TESTING
This course covers requirements related to magnetic particle inspection testing
- Theory of magnetic flux
- Characteristics of particle testing theory
- Characteristics of magnetic particle inspection tests
- Characteristics of stationary magnetic fluorescent particle inspection

ULTRASOUND INSPECTION TESTING
This course provides requirements for ultrasound inspection testing
- Theory of ultrasound
- Characteristics of ultrasound: straight beam
- Characteristics of straight beam testing process
- Characteristics of ultrasound: shear wave (angle beam)
- Characteristics of shear wave testing process

RADIOGRAPHY INSPECTION
This course explains radiographic inspection.
- Theory of ionizing radiation
- Characteristics of ionizing radiation process
- Safe practices for radiography testing
- Characteristics of film radiography
- How to evaluate radiograph quality

CURRICULUM DURATION: 5.5 HOURS
Learn the basic characteristics and requirements for reading and interpreting blueprints for marine construction drawings.

**BLUEPRINT NOMENCLATURE**

This course will provide you with a basic knowledge of drawing symbols and how to read blueprints.

- Line types, symbols, and abbreviations
- Symbols and abbreviations
- Blueprint nomenclature
- Shapes and dimensions
- Ship drawing conventions and notes

**VESSEL STRUCTURES**

This course will help you recognize vessel structures and provide you with the basic understanding needed to locate the structures in vessel drawings.

- Basic structural components
- Framing systems
- Special structures

**HULL DESIGN DRAWINGS**

This course covers hull design drawings that may be encountered during vessel construction. Hull design drawings define each structural component’s size and shape, and show the connection of components to form a structural system.

- Arrangement drawings
- Detailed component drawings
- Calculations

**MACHINERY DRAWINGS**

The characteristics of the machinery drawings are introduced. The course features drawing examples for propulsion shafting and rudder system arrangement to highlight the main characteristics of machinery drawings.

- Basic design drawings
- Detailed design drawings
- Other drawings related to structural design
ELECTRICAL DRAWINGS
This course covers the characteristics of the electrical drawings for electrical machinery, equipment and systems. These drawings show the electrical circuits and the physical location for each system, as well as the total power requirement for the vessel.
- System diagram drawings
- Layout drawings
- Calculations

PIPING DRAWINGS
This course covers the characteristics of piping drawings. Divided into three main zones, piping drawings include the specifications and design parameters for piping systems.
- Fabrication
- Welding and testing
- Installation

OUTFITTING DRAWINGS
This course explains the characteristics of outfitting drawings so you will understand how outfitting equipment is assembled and operated. Outfitting equipment includes systems that are not shown on structural, machinery, piping, or electrical drawings.
- Arrangement location
- Detailed drawings:
  - Size and type
  - Model number
  - Dimensions
  - Material
  - Quantity
  - Itemized parts list

CURRICULUM DURATION: 4 HOURS
Learn about crystalline structures, chemistry, and microstructures of steel and how the mechanical properties of steel can be manipulated through chemical composition and heat treatment.

**CRYSTALLINE STRUCTURES AND CHEMISTRY**
This course covers crystalline structures and the chemistry of steel.
- Crystalline structures
- Chemistry

**MICROSTRUCTURES**
This course explains steel microstructures.
- Microstructure characteristics
- Tempering time
- Grain size
- Effect on properties

**HEAT TREATMENT**
This course addresses different heat treatment methods for steel.
- Heat treatment methods
- Quenching
- Tempering
- Stress relief
- Hardenability

**MECHANICAL PROPERTIES**
This course covers the mechanical properties of steel.
- Mechanical testing
- Mechanical properties
- Ductility

**CURRICULUM DURATION: 3.5 HOURS**
MATERIALS TESTING

Learn about different ways of testing steel and recognize appropriate test methods and procedures.

TENSION TESTING
This course covers the purpose and requirements of tension tests, explains appropriate test procedures, and describes what is included as minimum content in a report.

- Test specimens
- Tension testing

IMPACT AND CTOD TESTING
This course covers the purpose and requirements of impact and CTOD testing, explains test methods and the meaning of their results, and describes how to accurately report results of impact and CTOD testing.

- Impact testing
- CTOD testing

FATIGUE AND BEND TESTING
This course covers the purpose and requirements of fatigue and bend testing, explains test methods and the meaning of their results, and describes what is included as minimum content in a report.

- Fatigue testing
- Bend testing

HARDNESS TESTING
This course covers the purpose and requirements of hardness testing, explains test methods and the meaning of their results, and describes what is included as minimum content in a report.

- Hardness testing
- Brinell hardness testing
- Rockwell hardness testing
- Microhardness testing

OTHER TESTS
This document describes additional, less common tests that may be required by design specifications, like the through-thickness test, the drop-weight test (DWT), and the drop-weight tear test (DWTT).

CURRICULUM DURATION: 4 HOURS
Become familiar with the chemistry and categorization of steel; the steel manufacturing process; ABS ordinary, higher strength, and special grade steels; non-ABS grade steels; and carbon steels used for pipes and tubes.

CHEMISTRY AND CATEGORIZATION
In this course, you will recall carbon steel chemistry and describe how carbon steel is categorized by oxygen content.

MANUFACTURING PROCESS
In this course, you will recall the carbon steel manufacturing process; describe the differences between the conditions of supply for steel products; and identify criteria used for steel mill qualification.

ORDINARY AND HIGHER STRENGTH STEELS
In this course, you will identify common steel product forms; describe ABS steel grades and their applications; and recall surveyor verification responsibilities.

ABS SPECIAL GRADE STEELS
In this course, you will recall the properties of ABS special grade carbon steels; describe tests specific to ABS special grade steels; and identify how ABS special grade steels are marked.

NON-ABS GRADE STEELS
In this course, you will describe non-ABS grade steels’ characteristics and identify requirements for acceptance of non-ABS grade steels; specifically the production process, testing, and chemistry requirements.

PIPES, TUBES, AND TUBULAR STRUCTURES
In this course, you will recall the characteristics and requirements for carbon steel pipes, tubes, and tubular structures used in marine vessels and offshore installations.
STEEL CASTINGS

Describe the characteristics of steel hull and machinery castings; identify requirements for examination, repairs, and marking of castings; and recognize unique characteristics of ductile and gray iron castings.

STEEL HULL AND MACHINERY CASTINGS

In this course, you will define casting terminology and processes, recall the chemical composition and mechanical properties of steel used in hull and machinery casting, and identify steel grades used for casting hull and machinery components.

• Casting process
• Mold preparation
• Chemical composition

EXAMINATION, REPAIRS, AND MARKING

In this course, you will explain the requirements for inspection, repairs, and marking of hull and machinery castings and identify the information required to certify hull and machinery castings.

• Visual and nondestructive inspection
• Minor and major defects

DUCTILE AND GRAY IRON CASTINGS

In this course, you will recall the characteristics of ductile, or nodular, iron and the characteristics of gray iron castings.

• Chemical properties
• Mechanical tests
• Heat treatment
• Examination

CURRICULUM DURATION: 2.5 HOURS
Recall the terminology and methods of carbon steel forging; identify types of forging and their causes; recognize the material characteristics of forgings; and describe the requirements of alloy steel machinery forgings.

**CARBON STEEL FORGINGS**
In this course, you will recall forging terminology and methods, identify forging grades, and describe forging heat treatments.
- Forging characteristics
- Types of hot forging

**FORGING DEFECTS**
In this course, you will define seams and other forging defects.

**MATERIAL CHARACTERISTICS OF FORGINGS**
In this course, you will recall the material characteristics of forgings and identify the testing, inspection, marking, and certification requirements for forgings.
- Chemical composition
- Specimen identification
- Tensile and hardness properties
- Acceptance requirements and criteria

**ALLOY STEEL MACHINERY FORGINGS**
In this course, you will recall the requirements for alloy steel machinery forgings.
- Machinery forgings
- Forging manufacturing
- Heat treatment requirements

**CURRICULUM DURATION: 3.5 HOURS**
NONMETALLIC MATERIALS

Gain insight into the properties and characteristics of two non-metallic materials used in the marine and offshore industry, fiber-reinforced plastics (FRP) and glass, and how ABS Rules relate to these.

INTRODUCTION TO NONMETALLIC MATERIALS
This course explains the applications of nonmetallic materials in the marine and offshore industries and describes the characteristics of thermosetting and thermoplastic polymers.
- Nonmetallic material applications
- Types of polymers

LAMINATE COMPOSITES FROM FIBER-REINFORCED PLASTICS
This course describes single skin and sandwich laminates, including composition and properties.
- FRP laminates
- Mechanical properties

LAMINATE COMPONENTS
This course covers the characteristics of laminate components.
- Laminate components
- Core materials

LAMINATE PROPERTIES AND TESTS
This course describes the properties of laminates, such as strength or stiffness, impact, fatigue, and heat resistance, and identifies tests to assess laminate properties.
- Laminate testing
- Fatigue and heat resistance

GLASS FOR MARINE APPLICATIONS
This course covers the types and physical properties of glass suitable for use in glazing for marine applications.
- Types of glass
- Glass treatments

CURRICULUM DURATION: 4.5 HOURS
QUALIFIED WELDING INSPECTOR

Learn the basic details of welding metallurgy, design, visual inspection, and welding processes.

MATERIAL TYPES AND CASTING DISCONTINUITIES
This course covers characteristics, types of discontinuities, and ABS requirements related to steel, castings, and forgings.
- Characteristics of steel, castings, and forgings
- Types of discontinuities
- ABS requirements for steel, castings, and forgings

MATERIAL PROPERTIES, CHARACTERISTICS, AND TESTS
This course provides information about materials properties and testing.
- Material property testing:
  - Tensile
  - Hardness
- Weld soundness testing:
  - Bend
  - Fillet break
  - Nick break
  - Toughness
  - Fatigue

BASIC WELDING METALLURGY
This course explains the principles of welding metallurgy, including grain structure, cooling rates, and heat treatment.
- Grain structure of steel
- Grain size and properties
- Cooling rates and structural properties
- Pre-heating and cooling
- Thermal stress relief
- Heat treatment methods

WELD JOINT GEOMETRY AND WELDING TERMINOLOGY
This course covers the types of weld joints and explains how parts are aligned before, during, and after welding.
- Overview of basic weld joints
- Weld joint parts and preparation
- Explanation of types of welds:
  - Groove
  - Fillet
  - Spot/Seam
  - Plug/Slot
  - Surfacing
  - Back
  - Backing
- Weld application terminology:

WELD SYMBOL TYPES AND TEST SYMBOL TYPES
This course explains how to read a welding plan and identify weld and test symbol types.
- Weld symbols
- Test symbols
- Supplementary symbols

WELDING PROCESSES
This course covers a variety of welding processes.
- Shielded metal arc welding
- Gas metal arc welding
- Flux core arc welding
- Submerged arc welding
- Gas tungsten arc welding
- Joint preparation
- Brazing and cutting processes
WELDING DISCONTINUITIES AND REPAIRS
This course explains welding discontinuities and repairs.
• Surface discontinuities
• Surface discontinuity weld repairs
• Weld root discontinuities
• Root discontinuity weld repairs
• Internal discontinuities
• Internal discontinuity weld repairs
• Cracking and cracking repairs

WELDING PROCEDURE QUALIFICATION
This course covers the qualified welding procedure based on ABS criteria.
• Welding procedure qualification
• Welder qualification documents
• Required tests to be performed, as necessary

WELDER PERFORMANCE QUALIFICATION
This course explains the ABS procedure for welder performance qualification.
• Welder performance qualification
• Welder qualification assessment
• Monitoring production welding

WELDING STRESS CONTROL
This course explains welding stress control.
• Heating and cooling effects on weld stresses
• Methods of controlling welding stress
• Weld stress correction techniques
• Welding sequence best practices

CURRICULUM DURATION: 16 HOURS
Recognize electrical concepts, systems and equipment, and their interdependencies in relation to conducting surveys in compliance with ABS classification requirements for marine vessels and offshore units.

**BASIC ELECTRICAL THEORY AND PRINCIPLES**

In this course, you will be able to define voltage, current, and resistance in a circuit; describe the role of Ohm’s Law in determining the voltage, current, and resistance in a circuit; explain electricity power and power factor; describe the harmful effect of harmonics in a power system installation; and explain the purpose of synchronizing and load sharing among generators.

**APPLIED ELECTRICAL CONCEPTS**

In this course, you will use Rule requirements and drawings to verify the number and capacity of generators, identify drawings needed to verify the number and capacity of generators, explain the effect of transient voltage variation on power systems, explain the purpose of one-line diagram drawings during the survey, and describe the power distribution arrangement.

**LOAD ANALYSIS**

In the course, you will describe load analysis and recognize how to determine the number and capacity of generators needed.

**LOADS, RATING, AND EARTHING**

In this course, you will recognize types of loads, identify IP ratings for equipment in specific locations, and explain the purpose of earthing methods.

**SHORT CIRCUITS**

In this course, you will recognize the effects of short circuits and identify requirements to mitigate the occurrence of short circuits.
PROTECTIVE DEVICES
In this course, you will identify protective devices in power systems.

TRANSFORMERS
In this course, you will identify different types of transformers and recognize applicable ABS Rule requirements.

ROTATING MACHINES: INSTALLATION, TESTING, AND PROTECTION
Keep your facts straight. In this course, you will describe installation requirements, describe protective measures for rotating machines, and identify shipboard testing requirements.

ROTATING MACHINES: FACTORY TESTS
In this course, you will identify factory testing requirements and recognize different types of factory tests.

ROTATING MACHINES CERTIFICATION
In this course, you will recognize the applicability of the Rules and the certification process for rotating machines.

SWITCHBOARDS AND SHORE CONNECTIONS
In this course, you will explain the switchboard certification process, recognize switchboards and requirements, and identify shore connection requirements.

SWITCHBOARD: CONSTRUCTION, COMPONENTS, AND INSTALLATION
In this course, you will identify switchboard construction, components, and installation requirements; recognize creepage and clearance in switchboard arrangements; and recognize switchboard testing requirements.

MOTOR CONTROL CENTERS AND MOTOR CONTROLLERS
In this course, you will recognize the motor control center and the motor controller’s installation requirements.

ELECTRICAL CABLE: TESTING AND CERTIFICATION REQUIREMENTS
In this course, you will recognize cable testing and certification requirements.

ELECTRICAL CABLE CONSTRUCTION
In this course, you will recognize the Rule requirements for cable construction.

CABLE INSTALLATIONS I
In this course, you will identify applicable Rule requirements and recognize potential installation issues during the survey.

CABLE INSTALLATIONS II
In this course, you will recognize cable installation requirements.

EMERGENCY GENERATOR AND LIGHTING
In this course, you will define a blackout situation and a dead ship condition, identify emergency sources of power, recognize lighting and emergency lighting systems, and describe applicable ABS Rule requirements.

BATTERY SYSTEM
In this course, you will recognize batteries as a transitional source of power, identify different battery types, and explain applicable ABS Rule requirements.

CURRICULUM DURATION: 14 HOURS
Learn the purpose of the navigation system, fire detection, and alarm systems, and recognize applicable regulatory requirements.

**NAVIGATION SYSTEMS**
In this course, you will explain the purpose of the navigation system and recognize applicable regulatory requirements.
- Navigation equipment
- Maneuvering equipment

**FIRE DETECTION AND ALARM SYSTEMS**
In this course, you will identify fire detection and alarm systems and recognize applicable regulatory requirements.
- Alarms and fixed fire detection system
- Fixed fire detection system components

**CURRICULUM DURATION: 1.5 HOURS**
AUTOMATION SYSTEMS

Recognize the purpose of monitoring and communication systems, specifications for cable installations, and applicable ABS Rule requirements.

MONITORING AND ALARM, SLOWDOWN, AND SHUTDOWN SYSTEMS

In this course, you will recall the different alarm systems for engine operations, recognize different functions in a safety system, identify different alarm systems apart from engine operations, and recognize applicable ABS Rule requirements.

COMMUNICATION SYSTEMS

Effective communication systems are critical on a vessel. In this course, you will identify communication system types and recognize applicable ABS Rule requirements.

CABLE INSTALLATIONS I

In this course, you will identify the different components that make up a computer-based system and define the different system categories for computer-based systems.

CABLE INSTALLATIONS II

In this course, you will recognize certification and test requirements for hardware and ship equipment and identify the software development life cycle phases and associated ABS Rule requirements.

CURRICULUM DURATION: 2.75 HOURS
PIPING SYSTEMS: GENERAL

Learn the basic characteristics of piping systems and their components on marine vessels and offshore units, as well as ABS plan review requirements for piping systems.

GENERAL PIPING
This course provides basic knowledge about piping terminology and design.
- Theory of piping systems
- Pipe classes
- Dimensioning of pipes and tubes

PIPING SYSTEM COMPONENTS
This course covers individual piping system components, their characteristics and their ratings.
- Main piping components
- Joining
- Other components
- Ratings

BASIC PIPING DESIGN REQUIREMENTS
This course covers the basic piping design requirements in accordance to ABS Rules.
- Basic piping design requirements related to:
  - Overpressure
  - Instrumentation
  - Metallic pipe design
  - Plastic pipe design
- Typical failures associated with piping systems

PIPING INSTALLATION REQUIREMENTS
This course covers the details and requirements of piping installation. The verification of installation details is fundamental to the safety of piping systems.
- General installation requirements
- Bulkhead, deck, and tank-top penetration
- Collision bulkhead penetration
- Overboard connection
- Control of static electricity
- Leakage containment arrangement
- Piping insulation
- Progressive flooding

PIPING MATERIALS
This course covers the use of piping materials other than mild steel. This creates unique hazards that need to be specifically addressed.
- Aluminum piping
- Stainless steel piping
- Copper alloy piping
- Multi-core tubing

CURRICULUM DURATION: 13.5 HOURS
PORT STATE CONTROL

Understand the purpose and impact of Port State Control. Recognize deficiencies and mitigation opportunities to reduce detentions.

**INTRODUCTION TO PORT STATE CONTROL**

In this course, you will learn what ABS is doing to reduce Port State Control detentions and identify communication opportunities for reducing these detentions.

**EXTERNAL HULL AND STATUTORY DOCUMENT DEFICIENCIES**

In this course, you will be to recognize deficiencies of the external hull and statutory certificates, documents, and records that may lead to detentions.

**NAVIGATION BRIDGE AND HULL DEFICIENCIES**

In this course, you will discover common deficiencies found with the bridge’s navigation and communication equipment, superstructure, and main decks.

**MACHINERY SPACE DEFICIENCIES**

This course explores common machinery space deficiencies including emergency generators, steering gears, and engines.

**LIFESAVING APPLIANCES, VENTILATION SYSTEMS, AND FIREFIGHTING EQUIPMENT DEFICIENCIES**

This course covers common deficiencies for lifesaving appliances, ventilation systems, and firefighting equipment.

**POST-DETENTION**

This course explains how ABS handles detentions including communication points between ABS, flag Administrations, owners, and Port State Control.

**CURRICULUM DURATION: 6.5 HOURS**
THICKNESS MEASUREMENTS FOR VESSELS

Understand the basic characteristics and ABS requirements of thickness measurements and how to evaluate and monitor thickness measurements on marine vessels.

THICKNESS MEASUREMENT CONCEPTS AND TOOLS
This course covers common terminology, evaluation and instrument calibration.
• Concept of ultrasonic thickness measurements
• Common terminology associated with thickness measurements
• Characteristics of evaluations
• How to calibrate ultrasonic testing instruments

GENERAL THICKNESS MEASUREMENT PROCESS
This course provides the basic requirements for monitoring, evaluating, and reporting thickness measurements.
• Important concepts for thickness measurements
• How to monitor thickness measurements
• How to evaluate thickness measurement report
• How to report thickness measurement results

SUBSTANTIAL CORROSION
This course covers the requirements for substantial corrosion found when taking thickness measurements.
• How to conduct an expanded scope of survey
• When to obtain additional measurements
• Process of documenting substantial corrosion

VESSEL THICKNESS MEASUREMENTS
This course provides the ABS criteria for thickness measurement for vessels.
• Enhanced Survey Program (ESP) notation
• Enhanced Survey Dry Cargo (ESDC) notation
• Vessels without ESP or ESDC notations

CURRICULUM DURATION: 6.5 HOURS
MODU OVERVIEW

Recognize the basic characteristics and requirements related to mobile offshore drilling units (MODUs).

INTRODUCTION TO MODUS
This course provides basic knowledge of MODUs.
- Typical characteristics and MODU types
- Classification and certification processes, plan approval process and MODU notations
- General aspects of drilling systems
- Applicable classification and statutory requirements

SELF-ELEVATING DRILLING UNITS
This course provides knowledge specific to jackups or SEDUs, including design and operational characteristics and requirements regarding structures, stability, machinery, and safety.
- Legs, footings, and hull
- Jacking and holding, skidding, and the cantilever
- Afloat and elevated stability
- Jacking gear and skidding systems
- Raw water and preload systems
- Lifesaving appliances and access to the water line

SURFACE-TYPE DRILLING UNITS
This course provides knowledge specific to surface-type drilling units, including design and modes of operation, and aspects of drillship and drill barge structures, machinery systems, and stationkeeping.
- Modes of operation
- Moonpool
- Machinery systems
- Stationkeeping

COLUMN-STABILIZED DRILLING UNITS
This course provides knowledge specific to semisubmersibles or CSDUs, including design and operational characteristics and requirements regarding structures, stability, machinery, and safety.
- Loads and other structural issues considered in global structural analysis
- Redundancy analysis
- Factors that influence stability analysis
- Damage stability scenario types
- Ballast systems
- Design angle of inclination for machinery
- Mooring and dynamic positioning
- Launching clearance requirements for lifesaving appliances

CURRICULUM DURATION: 3 HOURS
Gain foundational knowledge about the complete fluid pressure control system and learn how the related systems interact and depend on each other. Enhance your knowledge of the geology, processes, and risks involved in the location and exploitation of offshore oil and gas reservoirs.

**BASIC PETROLEUM GEOLOGY AND EXPLORATION**

This course explains the fundamentals of petroleum geology and oil exploration.

- Characteristics of hydrocarbons
- Basic geology of the formation of hydrocarbon reservoirs
- How geophysics is used to locate a hydrocarbon reservoir
- Potential risks involved in exploratory drilling

**BASIC OFFSHORE DRILLING**

This course covers the tools, equipment, and processes used to drill and complete an offshore well.

- How an oil well is drilled
- Steps of the drilling process
- Functions of major components of drilling units

**BASIC OFFSHORE WELL CONSTRUCTION**

This course includes the processes and equipment used to construct an offshore well.

- How an oil well is drilled
- Steps of the drilling process
- Functions of major components of drilling units
BASIC OFFSHORE WELL COMPLETION
This course explains the processes and equipment used to complete an offshore well.
• How to define well completion
• How a well is brought into production

BASIC OFFSHORE WELL PRESSURE CONTROL
This course presents the fundamental principles of well control and describe the causes and characteristics of well control events.
• Fundamental principles of well control
• Function of drilling fluids in well control
• Causes and characteristics of well control events

ONBOARD MUD CIRCULATION SYSTEMS
This course explains mud circulation and conditioning systems on board MODUs.
• Key equipment
• Delivery and mixing systems
• Mud circulation system
• Mud conditioning system
• Subsea mud circulation

SECONDARY WELL CONTROL
This course provides knowledge about required secondary well control actions when primary well control is no longer possible.
• Overview of primary and secondary well control
• Securing the well
• Restoring primary well control
• Subsea drilling units

CURRICULUM DURATION: 5.25 HOURS
THICKNESS MEASUREMENTS FOR OFFSHORE UNITS

Understand the basic characteristics and ABS requirements of thickness measurements, and how to evaluate and monitor thickness measurements on MODUs and other offshore units.

THICKNESS MEASUREMENT CONCEPTS AND TOOLS
This course covers common terminology, evaluation, and instrument calibration.
• Concept of ultrasonic thickness measurements
• Common terminology associated with thickness measurements
• Characteristics of evaluations
• How to calibrate ultrasonic testing instruments

GENERAL THICKNESS MEASUREMENT PROCESS
This course provides the basic requirements for monitoring, evaluating, and reporting thickness measurements.
• Important concepts for thickness measurements
• How to monitor thickness measurements
• How to evaluate thickness measurement report
• How to report thickness measurement results

SUBSTANTIAL CORROSION
This course covers the requirements for substantial corrosion found when taking thickness measurements.
• How to conduct an expanded scope of survey
• When to obtain additional measurements
• Process of documenting substantial corrosion

OFFSHORE UNIT THICKNESS MEASUREMENTS
This course provides basic requirements related to thickness measurements for offshore units.
• Mobile offshore drilling units
• Floating production installations
• Offshore fixed platform installations
• Single point moorings

CURRICULUM DURATION: 6.5 HOURS
MODU ELECTRICAL SYSTEMS

Recognize the basic characteristics and requirements of electrical systems and equipment specific for MODUs.

MODU ELECTRICAL SYSTEMS 1
This course provides basic knowledge of types and general requirements of MODU electrical systems and equipment.

- Types of MODU electrical systems and equipment
- General MODU electrical requirements
- Hazardous areas classification
- Requirements related to main and emergency source of power

MODU ELECTRICAL SYSTEMS 2
This course covers the classification and statutory requirements for major electrical systems on MODUs. Typical failures related to MODU electrical systems and equipment are explained.

- Ballast system power and control systems
- Jacking power and control systems
- Electrical equipment in hazardous areas
- Equipment installation and arrangement
- Emergency shutdown (ESD) arrangements
- Fire and gas detection systems
- Emergency control stations
- Harmonics analysis

CURRICULUM DURATION: 4 HOURS
MODU PIPING SYSTEMS

Understand the basic characteristics and requirements of piping systems specific for MODUs.

MODU PIPING SYSTEMS 1
This course provides basic knowledge of types and general requirements of MODU piping systems.
- Types of marine and utility piping systems
- General MODU piping requirements
- Requirements related to tank vents, sounding pipes, and tank overflows

MODU PIPING SYSTEMS 2
This course covers the requirements related to major marine and utility piping systems for MODUs.
- Bilge systems
- Ballast systems
- Fuel systems
- Lubrication oil systems

MODU PIPING SYSTEMS 3
This course covers the requirements related to other marine and utility piping systems for MODUs with an explanation of industrial piping systems related to drilling operations.
- Engine exhaust systems
- Engine starting air systems
- Cooling-water systems for internal combustion engines
- Helideck refueling systems
- Hydraulic systems
- Pre-load system
- Raw water system
- Well testing
- Leak detection system
- Housekeeping bilge system
- Low-pressure mud (LP mud) system
- High-pressure mud (HP mud) system
- Tensioner system
- Bulk air system
- Base oil system
- Drill water system
- Choke and kill systems
- High-pressure cement system
- Blowout preventer (BOP) hydraulic systems

CURRICULUM DURATION: 6 HOURS
OFFSHORE EMERGENCY SHUTDOWN (ESD) SYSTEMS

Learn the purpose of the ESD system, how the system operates, the components involved, conditions that trigger the system, how other systems are affected, and how to verify the effectiveness of the ESD system during a survey.

**EMERGENCY SHUTDOWN SYSTEMS: PURPOSE**

This course explains the purpose of ESD systems.

- Prevent or minimize unwanted release of hydrocarbons from industrial systems
- Mitigate the consequences of such release

**HOW EMERGENCY SHUTDOWN SYSTEMS OPERATE**

This course covers how ESD systems operate.

- Actions of emergency shutdown systems
- Multiple levels of emergency shutdown for offshore units

**EMERGENCY SHUTDOWN SYSTEMS: COMPONENTS**

This course covers ESD system components and their functions.

- Automatic and manual activation
- Shutdown actuators
- Signal transfer lines
- Power supply

**EMERGENCY SHUTDOWN SYSTEMS: TRIGGER CONDITIONS**

This course shows how to recognize major hazards for offshore units that require ESD system activation.

- System activation
- Gas, hydrogen sulfide, and fire detection

**SYSTEMS AND EQUIPMENT AFFECTED BY EMERGENCY SHUTDOWN SYSTEM**

This course explains how the ESD system interacts with other systems and equipment.

- Main electrical power
- Emergency generator power
- Ventilation systems
- Dynamic positioning and flare systems
- Import and export systems
- Drilling and production systems

**VERIFY EFFECTIVE OPERATION OF EMERGENCY SHUTDOWN SYSTEMS**

This course describes the actions needed to verify the correct operation of an ESD system.

- Record review and confirmatory tests
- Operating logic

**CURRICULUM DURATION: 3 HOURS**
Learn about offshore production installation units, class and statutory regulations, mooring systems, oil and gas production, import and export system components, and subsea production systems.

**OFFSHORE PRODUCTION INSTALLATIONS: INTRODUCTION**
This course explains the offshore production phase and describes the function and types of offshore production installations.

**CLASSIFICATION AND STATUTORY REGULATIONS**
This course describes the classification process and classification boundaries for offshore production installations and explains the application of statutory regulations.

**MOORING SYSTEMS**
This course covers the functions and types of position mooring systems.

**MOORING LINE COMPONENTS AND FOUNDATIONS**
This course identifies position mooring line components, explains catenary mooring and taut leg mooring configurations, and discusses different mooring line foundations.

**MOORING EQUIPMENT, TURRETS, AND Buoys**
This course describes mooring equipment on board a production unit and identifies types of turrets and buoys.
OIL AND GAS PRODUCTION
This course explains the function of the oil and gas process plant, identifies the operation and components of the separation, water treatment, and gas treatment and compression phases; and discusses the difference between process support systems and marine support systems.

LNG PRODUCTION
This course identifies the operation and components of the gas treatment, natural gas liquid recovery and treatment, and liquefied natural gas (LNG) liquefaction phases of an LNG production and process plant.

IMPORT AND EXPORT SYSTEMS
This course explains the function and components of the import system and explains the function and methods of the export system.

SUBSEA PRODUCTION SYSTEMS
This course explains the function and types of production risers, explains the function and characteristics of subsea pipelines, and discusses the purpose and main modules of the subsea production systems.

CURRICULUM DURATION: 6.25 HOURS
MULTI-CABLE TRANSIT SYSTEMS

Learn how to identify the different types of MCT systems and how to apply them; understand the surveyor’s role and responsibilities during installation, repair, and maintenance; and recognize potential issues with MCT systems.

MULTI-CABLE TRANSIT SYSTEMS: SYSTEM TYPES

This course covers a summary of commonly applied MCT systems available on the market and may not include all available products with varied ratings.

- Block transit systems
- Expandable and compound transit systems
- Poured transit systems
- Rubber plug transit systems
- Dry hardening putty transit systems

MULTI-CABLE TRANSIT SYSTEMS: INSTALLATIONS, REPAIRS, AND MAINTENANCE

This course covers the surveyor’s role and responsibilities during installation, repair, and maintenance of MCT systems, and explains how to verify the proper installation.

- Surveyor’s role
- Tasks during construction
- Tasks after construction
- Verifying proper installation

MULTI-CABLE TRANSIT SYSTEMS: MILLIONAIRE CHALLENGE

Are you up to the challenge? Test your ability to recognize potential issues with multi-cable transit systems.

CURRICULUM DURATION: 1.5 HOURS
SHAFT ALIGNMENT

Each course builds and seamlessly guides learners through the shaft alignment process with real scenarios and exercises.

SHAFT ALIGNMENT: INTRODUCTION
This introduction explains what shaft alignment means, how to prepare for surveys, the relevant procedures for the shaft alignment process, and the various methods that are employed.

- Fundamentals
- Survey Preparation
- Procedures
- Sighting Methods

SHAFT ALIGNMENT: DRYDOCK
While each shipyard may follow a different shaft alignment process, this curriculum explains a typical sequence of the procedural steps in drydock or on a slipway.

- Pre-Sighting and Stern Tube Bore Sighting
- Final Sighting of the Stern Tube
- Tail Shaft Clearance Measurements
- Sag and Gap Measurements

SHAFT ALIGNMENT: AFLOAT
With the vessel in the afloat condition, bearing reaction measurements are the first indication that shaft alignment is in accordance with reviewed calculations.

- Bearing Reaction Measurements: Part 1
- Bearing Reaction Measurements: Part 2
- Bearing Reaction Measurements: Part 3
- Main Engine Installation and Gear Tooth Contact

SHAFT ALIGNMENT: SEA TRIALS
Sea trial testing is the final stage of the shaft alignment process. All shafting and components are installed, and the functionality of the entire system can be tested and confirmed.

- Sea Trials
- Sea Trial Scenario 1
- Sea Trial Scenario 2

CURRICULUM DURATION: 20.5 HOURS
GAS CARRIERS

Take a phased approach to learn more about gas carriers. Phase I covers the science of natural gas, ship types, and hazards. Phase II includes design requirements, safety systems, and cargo containment systems. Phase III addresses gas carrier systems and cargo handling equipment and operations.

GAS CARRIERS: WELCOME
This course provides an overview of the Gas Carriers program.

TERMS AND CONDITIONS FLIP CARD ACTIVITY
This course explores gas carrier terms and definitions used throughout the program.

INTRODUCTION TO NATURAL GAS
This course presents the characteristics and properties of natural gas.

THE SCIENCE BEHIND NATURAL GAS
This course covers the characteristics and properties of natural gas.

NATURAL GAS VALUE CHAINS AND SUPPORTING TECHNOLOGIES
This course explains the activities required to move natural gas from production to the market.

SHIPS CARRYING LIQUEFIED GASES
This course provides information about ships that carry liquefied gas in bulk.

CARGO HAZARDS
This course provides an overview of liquefied gas cargo hazards and gas dangerous zones.

SHIP SURVIVAL CAPABILITIES
This course provides requirements for identified ship types carrying liquefied gases.

SURVEYS AND CERTIFICATE OF FITNESS
This course covers gas carrier surveys and International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk components.

CARGO CONTAINMENT SYSTEMS OVERVIEW
Learn about the advantages and disadvantages of the different types of gas carrier cargo containment systems.

DESIGN REQUIREMENTS
This course covers the IGC Code requirements for gas carrier cargo containment systems and hull design.

SAFETY SYSTEMS
This course provides an overview of safety systems for transporting liquefied gases in bulk.

TYPE A CARGO CONTAINMENT SYSTEM
Learn about the Type A cargo containment system’s characteristics, support systems, materials, and insulation.

TYPE B CARGO CONTAINMENT SYSTEM
Learn about the Type B cargo containment system’s characteristics, support systems, materials, and insulation.

TYPE C CARGO CONTAINMENT SYSTEM
Learn about the Type C cargo containment system’s characteristics, support systems, materials, and insulation.

GTT NO 96 MEMBRANE CARGO CONTAINMENT SYSTEM
Learn about the GTT NO 96 membrane cargo containment system, including characteristics, support system, materials, and insulation.

GTT MARK III MEMBRANE CARGO CONTAINMENT SYSTEM
Learn about the GTT Mark III membrane cargo containment system, including characteristics, support system, materials, and insulation.
GAS TRIALS AND INITIAL SURVEYS
This course provides reading materials about the purpose of gas trials.

AUTOMATION FOR GAS CARRIERS
This course explores the role of automation on gas carriers and the processes that are executed by the integrated automation system.

CARGO CONTROL ROOMS
This course explains location requirements for the cargo control room.

CARGO HANDLING OPERATIONS
This course provides a complete cycle of ship loading and discharging operations.

CARGO PIPING AND VALVES
Learn about gas carrier piping systems, fabrication and testing requirements, and cryogenic testing requirements.

CARGO PUMPS AND COMPRESSORS
This course addresses ways to extract residual cargo on gas carriers and characteristics of pump and compressor types.

ELECTRICAL EQUIPMENT IN GAS DANGEROUS SPACES
This course provides certification requirements and standards for electrical equipment in gas dangerous spaces.

GAS DETECTION SYSTEMS
This course covers the gas detection systems installed on gas carriers, including systems design and operational requirements.

HEAT EXCHANGERS
This course explains the function, types, and certification requirements of heat exchangers.

INERT GAS AND NITROGEN SYSTEMS
This course provides an overview of how inert gas and nitrogen are obtained and used during gas carrier operations.

LIQUID LEVEL MEASUREMENTS
This course describes liquid level gauge requirements in the IGC Code and ABS Rules.

PRESSURE AND TEMPERATURE MONITORING
This course provides an overview of pressure and temperature monitoring on gas carriers.

PRESSURE CONTROL
This course covers gas management methods for modern LNG carriers, including cargo tank pressure control, refrigeration, and reliquefaction equipment.

CURRICULUM DURATION: 25 HOURS
With the IMO’s recent requirement for cybersecurity to be addressed in a company’s safety management system, internal and external auditors need to know what to look for to verify compliance.

**INTRODUCTION TO CYBERSECURITY**
Understand the importance of cybersecurity and know why cybersecurity is addressed in the safety management system.

- Importance of cybersecurity
- Technologies and cyber risks
- Mitigating risk
- Cyber risk management

**CYBERSECURITY BASICS**
Learn the difference between information technology and operational technology, and recognize systems that are vulnerable to cyber threats.

- Information technology
- Operational technology
- System integration
- Critical system onboard networks
- Critical systems
- Individual and integrated systems

**CYBER RISK MANAGEMENT: APPROACH**
Know the approach for cyber risk management and associated risk assessment methodologies.

- IMO framework
- Identifying cyber risks
- Cyber risk management
- Calculating risk

**CYBER RISK MANAGEMENT: THREATS**
Understand the concept of cyber threats for the maritime industry and recognize the various types of cyber threats.

- Cyber threats: Internal and external
- Company threat examples
- Ship threat examples
- Subcontractors, vendors, and third parties
- Types of threats. Unintentional and intentional

**CYBER RISK MANAGEMENT: VULNERABILITIES**
Recognize the concept of cyber vulnerabilities for the maritime industry, both on oard and ship-to-shore.

- Cyber vulnerabilities
- Human factor and human error
- Network connections and routers
- Remote access examples
- Vulnerabilities on board
CURRICULUM DURATION: 6 HOURS

CYBER RISK MANAGEMENT: CONSEQUENCES
Explain the concept of consequences within the cyber risk management cycle.
- Consequences overview
- Cyber risk management
- System protection
- Operational consequences
- Physical consequences
- Severity levels and actions

CYBER RISK MANAGEMENT: THREATS, VULNERABILITIES, AND CONSEQUENCES ACTIVITY
In this activity, learners will identify potential cyber threats, vulnerabilities, and consequences about a cyber event.
- Scenario
- Threats, vulnerabilities, and consequences
- Auditor actions

CYBER RISK MANAGEMENT: CONTROL MEASURES
Explain the concept of cybersecurity control measures for the maritime industry and recognize appropriate control measures.
- Control measures overview
- Physical control measures
- Logical control measures
- Implementing control measures

CYBER RISK MANAGEMENT AND THE SMS
Identify the ISM Code elements that are applicable to cybersecurity and develop questions to gather objective evidence for compliance.
- Safety management system
- Cyber risk management framework

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• Surveyor’s role
• Tasks during construction
• Tasks after construction
• Verifying proper installation

MULTI-CABLE TRANSIT SYSTEMS: MILLIONAIRE CHALLENGE

Are you up to the challenge? Test your ability to recognize potential issues with multi-cable transit systems.

CURRICULUM DURATION: 1.5 HOURS
Decarbonization challenges present questions for all stakeholders, regulators, ship owners, vendors, and investors. Understanding decarbonization’s impact, drivers, and implications are of utmost importance to the shipping industry.

**MARITIME DECARBONIZATION**

This course focuses on the decarbonization drivers motivated by IMO regulations, financial institutions, multinational charterers, and market-based measures from local and regional authorities that support new vessel construction and retrofits.

- Regulatory Impact
- Beyond Regulations
- Pathways to Sustainable Shipping
- Decarbonization Drivers

**DECARBONIZATION SOLUTIONS**

In this course, you will explore the benefits of decarbonization, including different strategies for reducing emissions, and some of the challenges of low-carbon shipping.

- Alternative Fuels and Energy Sources
- Technology Improvements
- Operational Efficiencies
- Carbon-Reducing Solutions

**SUSTAINABILITY AT ABS**

This course covers ABS sustainability services and solutions, including compliance portals and analytical tools, to support clients with their decarbonization journeys.

- Sustainable Development
- Carbon Intensity Reduction
- Digital Monitoring
- Carbon Accounting

**CURRICULUM DURATION: 3 HOURS**
STEEL VESSEL STRUCTURES

Gain the basic knowledge necessary to correctly apply the ABS structural Rule requirements.

**BASIC REQUIREMENTS: INTRODUCTION**
This course introduces the Steel Vessel Basic Requirements curriculum.

**RELEVANT CLASS NOTATIONS**
This course examines the basic class notations and symbols related to steel vessel structures and the importance of these notations and symbols in defining applicable requirements.

**MAIN DIMENSIONS**
This course provides definitions of the most important main dimensions for a vessel.

**HULL STRUCTURE MATERIALS**
This course covers basic characteristics of structural materials applied in the Rules for the verification of their adequacy to the intended service.

**WELDING AND COATING REQUIREMENTS**
This course addresses basic knowledge related to welding and coating.

**HULL GIRDER LONGITUDINAL STRENGTH**
This course explains the concepts related to hull girder longitudinal strength.

**SECTION MODULUS AND MOMENT OF INERTIA**
This course briefly addresses the basic concepts related to these two structural characteristics of the hull.

**SCANTLING CALCULATIONS**
This course addresses methods used to determine the correct scantlings and bases of Rule scantling formulas.

**BASIC REQUIREMENTS: CLOSING**
This course closes the Steel Vessel Basic Requirements curriculum.

**MAIN HULL STRUCTURE OVERVIEW**
This course introduces the Main Hull Structure Overview curriculum.

**SHELL PLATING**
Learn more about side and bottom plating and related specific details, including shape, capacity, and hydrodynamic properties.

**DECK PLATING: TYPES OF DECKS**
In this course, you will define the types of decks and their basic characteristics.

**DECK PLATING: DECK AND INNER BOTTOM REQUIREMENTS**
Learn more about the characteristics and requirements for deck plating and the inner bottom plating.

**BOTTOM STRUCTURES**
This course covers requirements related to the structural members of a typical double-bottom arrangement, including structural details of the fore end.

**SIDE STRUCTURES**
Strengthen your knowledge by learning more about deck structural elements, including pillars and their requirements.

**DECK STRUCTURES**
Learn more about the necessary hatch openings for loading and unloading cargo.

**BULKHEAD TYPES**
Learn about the different types of bulkheads. This course covers bulkhead types and their basic characteristics.
BULKHEAD CONSTRUCTION AND ARRANGEMENTS
This course covers the structural construction and arrangements of bulkheads, including related requirements.

MAIN HULL STRUCTURE OVERVIEW: CLOSING
This course closes the Main Hull Structure Overview curriculum.

SPECIFIC AND MISCELLANEOUS REQUIREMENTS: INTRODUCTION
This course introduces the Specific and Miscellaneous Requirements curriculum.

OPENINGS AND PENETRATIONS
Open the door to learn about openings, arrangements, and penetrations.

SUPER STRUCTURES AND DECKHOUSES
Extend your knowledge of definitions, requirements, and structural elements related to superstructures and deckhouses.

OPENING PROTECTION AND SAFETY FEATURES
Learn about regulations and requirements related to opening protection and safety features on weather decks.

MISCELLANEOUS STRUCTURE REQUIREMENTS
Build your foundation of machinery, equipment, and hull appendages.

STRUCTURAL DESIGN REVIEW: LESSONS LEARNED
Reinforce what you know about design to prevent cracks, fractures, and defects that may be the origin of a structural failure.

SPECIFIC AND MISCELLANEOUS REQUIREMENTS: CLOSING
This course closes the Specific and Miscellaneous Requirements curriculum.

CURRICULUM DURATION: 10 HOURS
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