

SYLLABUS

MODULE 1

Certificate in Naval Architecture

Introduction to Naval Architecture

Course Content

- What naval architecture involves
- How it developed
- The roles of the naval architect
- The approach adopted for this course

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MODULE 2

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Hydrostatics

Course Content

- Prepare the ship's loading and sailing condition, using the ship's Hydrostatic Curves
- Derive the ship's stability for the sailing condition, using the ship's Cross Curves of Stability
- Assess the ship's Statical Stability Curve against the regulatory standards
- Explain how damage stability is calculated using the current IMO Probabilistic Approach

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MODULE 3

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The Marine Environment

Course Content

- The sea on which the ship operates
- Winds that act on the ship and that create waves on the sea surface
- Waves and how they are classified and determined for design and operation
- Types of ice and how they develop
- The important aspects of ship operation in ice and cold environments
- The need to protect the marine environment
- IMO regulations through MARPOL
- The ship energy efficiency index and its design implications
- Protection of the ship in the marine environment

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MODULE 4

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Operating in the Marine Environment

Course Content

- Name the components of resistance experienced by a ship and explain how full scale resistance may be calculated from model experiments
- Describe the various types of manoeuvring devices and measure the manoeuvring capabilities of a ship
- Define the motions of a ship in a seaway and predict the magnitude of these motions
- Give examples of ship's operation in confined waters and various hazards that ships may experience in waves

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MODULE 5

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Durability in the Marine Environment

Course Content

- The importance of a reliably safe structure
- The calculations carried out to ensure an adequate ship strength both vertically and horizontally
- The use of different materials
- Acceptance criteria
- Tensile, buckling and fatigue strengths
- Protection against ice, fire and corrosion
- The use of materials other than steel in ships' structures

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MODULE 6

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Regulatory Frameworks and Ship Maintenance

Course Content

- History
- Component parts – Assembly, Council and Committees
- Conventions – how they originate, are adopted and come into force
- General contribution to ship safety

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MODULE 7

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Fundamentals of Ship Design

Course Content

- The three main stages in the design of a ship and factors considered at each stage
- Importance of getting the design right in the early stages
- Processes adopted during the different ship design stages
- Importance of a methodical approach to design and interactive nature of the design process
- Use of computers in design
- Development of ship hull forms and factors consider
- Factors that govern the layout of a ship ,how space is allocated and how access is arranged
- Importance of human factors to the safe and efficient operation of a ship and suitable internal environment
- Types of ships, merchant and naval