



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

Ship Design And Cargo Operations Fundamentals Training

Services / Transport, Operations and Logistics

Unit Standard 117638 · NQF Level 4 · 10 Credits · 7 Days

COURSE OVERVIEW

This course provides participants with a comprehensive understanding of ship design principles and cargo operations, focusing on safety, efficiency, and regulatory compliance. Learners will gain the knowledge required to manage cargo handling processes and ensure vessel stability, contributing to safer maritime operations.

Category	Services
Subfield	Transport, Operations and Logistics
Unit Standard	117638
Accreditation	SAQA Accredited · NQF Level 4 · 10 Credits
Duration	7 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply fundamental ship design principles to assess vessel stability and structural integrity.
- Analyze cargo stowage and securing methods to ensure safe and efficient operations.
- Evaluate the impact of cargo types on ship handling and stability.
- Demonstrate compliance with relevant international maritime regulations and safety standards.
- Implement cargo loading and discharge plans to optimize operational efficiency.
- Identify and mitigate risks associated with cargo operations and ship design.

WHO SHOULD ATTEND

- This course is designed for maritime professionals, including ship officers, cargo superintendents, port operations staff, and logistics personnel involved in ship design and cargo operations.

COURSE OUTLINE

Day 1: Introduction to Ship Design and Naval Architecture

- Overview of maritime industry and shipping.
- History of ship design and technological advancements.
- Ship types: cargo vessels, tankers, container ships, bulk carriers.
- Basic naval architecture: buoyancy, stability, hydrostatics.
- The ship design spiral: concept, preliminary, contract, detail design.
- Introduction to regulatory bodies (IMO, SOLAS, MARPOL).

Day 2: Hull Form and Structural Design

- Hull form: length, beam, depth, draft, block coefficient.
- Lines plan and offsets.
- Ship structure: keel, frames, girders, plating, bulkheads.
- Longitudinal and transverse strength.
- Materials: steel grades, aluminium, composites.
- Corrosion protection and coating systems.

Day 3: Stability and Trim

- Centres of gravity, buoyancy, and metacentric height.
- Stability curves (GZ curve) and range of stability.
- Free surface effect and its correction.
- Intact stability criteria (IMO IS Code).
- Damage stability: flooding, compartmentation, survivability.
- Trim calculations: change in draft forward/aft.

Day 4: Cargo Operations and Stowage Principles

- Cargo types: break bulk, containerised, liquid, dry bulk.
- Stowage planning: weight distribution, segregation.
- Cargo securing: lashing, dunnage, blocking.
- Loading and unloading operations: port equipment, ship gear.
- Cargo documentation: bills of lading, cargo manifests.
- Dangerous goods: classification, segregation, IMDG Code.

Day 5: Ship Propulsion and Power Systems

- Propulsion systems: diesel, gas turbine, steam, electric.
- Propellers: types, cavitation, efficiency.
- Auxiliary machinery: pumps, compressors, generators.
- Fuel systems: HFO, MDO, LNG, emission controls.
- Steering gear and thrusters.
- Power management and electrical distribution.

Day 6: Ship Operations and Safety Management

- ISM Code: safety management system, audits.
- Risk assessment: hazard identification, mitigation.
- Emergency response: fire, collision, grounding, man overboard.
- Ballast water management and treatment.
- Oil pollution prevention (MARPOL Annex I).

- Personal safety: PPE, permit to work systems.

Day 7: Integrated Design Project and Assessment

- Group project: design a small cargo vessel.
- Hull form selection and general arrangement.
- Stability and trim calculations for a loading condition.
- Cargo stowage plan and securing arrangements.
- Propulsion and power system selection.
- Safety and environmental compliance review.
- Presentation of design and peer feedback.
- Written examination covering all days.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **10 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 28,200.00	R 28,200.00
1	In-House	R 36,700.00	R 36,700.00
1	On-Campus (Pretoria)	R 42,300.00	R 42,300.00

UPCOMING SESSIONS

Start	End	Method	Venue
05 Aug 2026	13 Aug 2026	On-Campus	Pretoria, South Africa
05 Aug 2026	13 Aug 2026	On-Campus	Lagos, Nigeria
06 Aug 2026	14 Aug 2026	On-Campus	Johannesburg, South Africa
07 Aug 2026	17 Aug 2026	On-Campus	Mauritius
10 Aug 2026	18 Aug 2026	On-Campus	Dubai, UAE
11 Aug 2026	19 Aug 2026	On-Campus	Pretoria, South Africa
12 Aug 2026	20 Aug 2026	On-Campus	Abu Dhabi, UAE
13 Aug 2026	21 Aug 2026	On-Campus	Mauritius

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 117638) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call +27 12 004 8389 or WhatsApp +27 65 077 6310 and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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