



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 Mechanical Systems Understanding

Law, Military Science and Security / Sovereignty of the State

Unit Standard 259399 · NQF Level 4 · 8 Credits · 5 Days

COURSE OVERVIEW

This course provides learners with a fundamental understanding of the mechanical systems found on ships, including propulsion, auxiliary, and steering systems. It equips participants with the knowledge to identify, operate, and maintain these systems safely and efficiently, ensuring compliance with maritime regulations.

Category	Law, Military Science and Security
Subfield	Sovereignty of the State
Unit Standard	259399
Accreditation	SAQA Accredited · NQF Level 4 · 8 Credits
Duration	5 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Demonstrate an understanding of the principles and components of ship propulsion systems.
- Identify and describe the functions of auxiliary mechanical systems, including pumps, compressors, and generators.
- Analyze the operation of steering gear and stabilizer systems.
- Apply safety procedures and maintenance practices for ship mechanical systems.
- Evaluate common faults and troubleshooting methods for mechanical systems on a ship.
- Implement proper start-up, operation, and shutdown procedures for ship machinery.

WHO SHOULD ATTEND

- This course is designed for marine engineers, deck officers, ship technicians, and anyone involved in the operation or maintenance of ship mechanical systems.

COURSE OUTLINE

Day 1: Introduction to Ship Mechanical Systems and Safety

- Overview of ship mechanical systems: propulsion, auxiliary, and deck machinery.
- Safety regulations (OHSA, SAMSA) and hazard identification.
- Basic fluid mechanics: pressure, flow, and Bernoulli's principle.
- Introduction to thermodynamics: heat transfer and cycles.
- Materials used in shipbuilding: steel, aluminium, composites.
- Corrosion prevention and cathodic protection basics.
- Lubrication fundamentals and lubricant types.
- Documentation and logbook procedures.

Day 2: Propulsion Systems and Engine Room Layout

- Diesel engine principles: four-stroke and two-stroke cycles.
- Gas turbine and steam turbine basics.
- Propulsion shafting: thrust blocks, intermediate shafts, stern tubes.
- Propeller types: fixed pitch, controllable pitch, nozzles.
- Engine room arrangement: machinery placement and access.
- Piping systems: cooling water, fuel oil, lubricating oil.
- Starting systems: compressed air, electric starters.
- Control systems: remote and bridge control.

Day 3: Auxiliary Systems and Support Equipment

- Electrical generation: alternators, switchboards, emergency generator.
- HVAC and refrigeration systems: compressors, condensers, evaporators.
- Pumps: centrifugal, positive displacement, and their applications.
- Compressed air systems: service and control air.
- Heat exchangers: shell-and-tube, plate type.
- Bilge and ballast systems: piping, valves, oily water separators.
- Fire-fighting systems: CO2, foam, sprinkler.
- Steering gear: hydraulic and electric systems, rudder types.

Day 4: Deck Machinery and Cargo Handling Equipment

- Windlasses and capstans: anchor handling and mooring.
- Mooring winches: tension control and quick release.
- Cargo cranes: types, load limits, safety interlocks.
- Hatch covers: folding, rolling, pontoon types.
- Ramps and side doors for Ro-Ro vessels.
- Hydraulic systems: pumps, valves, actuators, filters.
- Emergency shutdown systems and fail-safe mechanisms.
- Routine inspections and maintenance schedules.

Day 5: Troubleshooting, Maintenance, and Practical Integration

- Troubleshooting methodology: symptoms, causes, corrective actions.
- Common faults in engines, pumps, and hydraulic systems.
- Preventive maintenance programs: checklists and intervals.
- Condition monitoring: temperature, pressure, vibration, oil analysis.
- Spare parts management and inventory control.

- Class survey requirements and statutory inspections.
- Case studies: real-world failures and solutions.
- Final assessment and review.

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 **8 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 23,000.00	R 23,000.00
1	In-House	R 29,900.00	R 29,900.00
1	On-Campus (Pretoria)	R 34,500.00	R 34,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	14 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Abu Dhabi, UAE
10 Aug 2026	14 Aug 2026	On-Campus	Pretoria, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Dubai, UAE
10 Aug 2026	14 Aug 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Mauritius
17 Aug 2026	21 Aug 2026	On-Campus	Dubai, UAE
17 Aug 2026	21 Aug 2026	On-Campus	Pretoria, South Africa

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 259399) 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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