



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

Operate Road Rail Vehicles And Associated Hydraulic Equipment Training

Physical Planning and Construction / Civil Engineering Construction

Unit Standard 119983 · NQF Level 3 · 18 Credits · 15 Days

COURSE OVERVIEW

This course equips learners with the competence to operate road-rail vehicles and associated hydraulic equipment safely and effectively in the South African rail environment. It covers pre-operational checks, operational procedures, and maintenance of hydraulic systems, ensuring compliance with relevant safety legislation and industry standards. Successful learners will be able to demonstrate the skills required to perform tasks such as vehicle positioning, coupling, and basic troubleshooting.

Category	Physical Planning and Construction
Subfield	Civil Engineering Construction
Unit Standard	119983
Accreditation	SAQA Accredited · NQF Level 3 · 18 Credits
Duration	15 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Demonstrate knowledge of road-rail vehicle types, components, and hydraulic systems.
- Apply pre-operational inspection procedures to ensure vehicle and equipment readiness.
- Operate road-rail vehicles safely on road and rail surfaces, including coupling and uncoupling.
- Implement hydraulic equipment controls for lifting, tilting, and material handling tasks.
- Analyze common faults in hydraulic systems and perform basic corrective actions.
- Evaluate operational hazards and apply risk control measures in accordance with safety regulations.

WHO SHOULD ATTEND

- This training is intended for individuals who operate or intend to operate road-rail vehicles and hydraulic equipment in railway, construction, or maintenance settings, including machine operators, yard personnel, and maintenance staff.

COURSE OUTLINE

Day 1: Introduction to Road Rail Vehicles and Hydraulic Systems

- Overview of road rail vehicles: types, applications, and industries.
- Fundamental hydraulic principles: Pascal's law, flow, pressure.
- Components: pumps, valves, cylinders, motors, filters, reservoirs.
- Introduction to Unit Standard 119983 and SAQA requirements.
- Health and safety legislation: OHS Act, relevant regulations.
- Personal protective equipment (PPE) and safe work practices.

Day 2: Hydraulic System Components and Functions

- Hydraulic pumps: gear, vane, piston – characteristics and selection.
- Control valves: directional, pressure, flow control.
- Actuators: cylinders (single/double acting), hydraulic motors.
- Ancillary components: filters, coolers, accumulators, gauges.
- Hydraulic symbols and schematic reading.
- Component layout on typical road rail vehicles.

Day 3: Hydraulic Circuits and System Operation

- Basic hydraulic circuits: meter-in, meter-out, bleed-off.
- Regenerative circuits for speed enhancement.
- Sequencing and synchronising circuits.
- Counterbalance and pilot-operated check valves.
- Pressure control: relief, reducing, unloading valves.
- Practical calculations: force, speed, power.

Day 4: Road Rail Vehicle Systems and Controls

- Road mode vs. rail mode: changeover mechanisms.
- Steering systems: front axle, rear axle, crab steer.
- Braking systems: service, parking, emergency – hydraulic and pneumatic.
- Hydraulic drive for rail wheels: traction and speed control.
- Load sensing hydraulic systems for efficiency.
- Operator controls: joysticks, pedals, switches.

Day 5: Pre-Operational Checks and Maintenance Fundamentals

- Pre-start inspection checklist: visual, fluid levels, leaks, damage.
- Hydraulic fluid types, viscosity grades, and additives.
- Contamination control: sources, measurement (ISO codes), filtration.
- Routine maintenance: filter replacement, breather checks, hose inspection.
- Fluid sampling and analysis procedures.
- Record keeping for maintenance and defects.

Day 6: Safe Operation of Road Rail Vehicles

- Operating procedures: entering/exiting rail tracks, level crossings.
- Hazard identification: overhead lines, track conditions, other traffic.
- Warning systems: lights, horns, flags, radios.
- Safe speeds and stopping distances on rail.
- Emergency procedures: brake failure, derailment, fire.

- Personal safety: correct PPE, safe access/egress.

Day 7: Practical Operation – Basic Maneuvers

- Practical session: vehicle familiarisation, controls layout.
- Engine start, pre-op checks, moving off in road mode.
- Rail mode engagement: procedure and safety checks.
- Basic rail driving: straight line, stopping, reversing.
- Hydraulic function operation: stabilisers, booms (if applicable).
- Shutdown procedures and post-operation checks.

Day 8: Advanced Maneuvers and Coupling Operations

- Coupling types: automatic, manual, hydraulic.
- Coupling procedure: alignment, connection, air/electrical lines.
- Shunting techniques: pushing loads, spotting wagons.
- Hydraulic load handling: crane operation, tipper controls.
- Load limits: axle loads, rail capacity, stability.
- Practical exercise: coupling and shunting a train.

Day 9: Troubleshooting Hydraulic Systems

- Common symptoms and their causes: cavitation, aeration, leaks.
- Pressure testing: relief valve setting, pressure drop across components.
- Flow testing: pump output, cylinder speed.
- Temperature issues: causes of overheating, coolers.
- Component failure analysis: pumps, valves, cylinders.
- Troubleshooting flowcharts and documentation.

Day 10: Practical Maintenance and Component Replacement

- Filter replacement: location, type, correct procedure.
- Hose replacement: selection, routing, torque specifications.
- Fittings: O-rings, flare, quick-connect – inspection and installation.
- Air bleeding: manual and automatic methods.
- Pressure adjustment: relief valves, compensators.
- Practical exercise: perform a filter and hose change.

Day 11: Operational Planning and Site Safety

- Job planning: route assessment, track possession, permits.
- Risk assessment: identifying hazards, evaluating risk, controls.
- Communication protocols: radio, hand signals, light signals.
- Emergency response: first aid, fire extinguisher use, spill containment.
- Incident reporting procedures.
- Simulated scenario: plan and execute a safe operation.

Day 12: Practical Application – Complex Tasks

- Scenario: material handling on a rail maintenance site.
- Using hydraulics: lifting beams, positioning ties, operating attachments.
- Team coordination: spotter, operator, supervisor.
- Load stability: outriggers, cribbing, load charts.
- Time management and task sequencing.
- Debrief and performance evaluation.

Day 13: Regulatory Compliance and Documentation

- Logbooks: daily checks, defects, hours of service.
- Maintenance records: service intervals, parts replaced.
- Regulatory bodies: RSR, DOL, SABS.
- Standards: SANS 3000 series, ISO 4413.
- Audit preparation: documentation, vehicle condition.
- Practical exercise: complete a logbook entry.

Day 14: Assessment Preparation and Review

- Comprehensive review: hydraulic theory, components, circuits.
- Review of safe operating procedures and regulations.
- Practical skills practice: maneuvers, coupling, maintenance.
- Mock assessment: written test and practical demonstration.
- Feedback and individual coaching.
- Final Q&A; session.

Day 15: Final Assessment and Certification

- Written assessment: multiple choice, short answer.
- Practical assessment: pre-op checks, rail operation, hydraulic use, troubleshooting.
- Oral questioning to confirm understanding.
- Assessment debrief: results, areas for improvement.
- Issuance of certificate of competence (if passed).
- Guidance on logbook completion and future training.

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 **18 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 48,600.00	R 48,600.00
1	In-House	R 63,200.00	R 63,200.00
1	On-Campus (Pretoria)	R 72,900.00	R 72,900.00

UPCOMING SESSIONS

Start	End	Method	Venue
05 Aug 2026	25 Aug 2026	On-Campus	Johannesburg, South Africa
06 Aug 2026	26 Aug 2026	On-Campus	Mauritius
07 Aug 2026	27 Aug 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	28 Aug 2026	On-Campus	Pretoria, South Africa
11 Aug 2026	31 Aug 2026	On-Campus	Abu Dhabi, UAE
12 Aug 2026	01 Sep 2026	On-Campus	Durban, South Africa
12 Aug 2026	01 Sep 2026	On-Campus	Mauritius
13 Aug 2026	02 Sep 2026	On-Campus	Cape Town, 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 119983) 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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