



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

Advanced Hydraulics

Custom Courses / Hydraulics, Pneumatics & Fluid Power

Unit Standard AATICD-0222 · NQF Level 5 · 10 Credits · 5 Days

COURSE OVERVIEW

This course equips learners with advanced knowledge and skills to design, analyze, and maintain complex hydraulic systems in industrial settings. It covers system troubleshooting, component selection, and safety compliance to ensure efficient and safe operations. Participants will gain the expertise to optimize hydraulic system performance and reliability.

Category	Custom Courses
Subfield	Hydraulics, Pneumatics & Fluid Power
Unit Standard	AATICD-0222
Accreditation	SAQA Accredited · NQF Level 5 · 10 Credits
Duration	5 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Analyze and interpret complex hydraulic circuit diagrams and schematics.
- Design hydraulic systems to meet specific operational requirements.
- Evaluate system performance and diagnose faults using advanced testing equipment.
- Implement preventive maintenance programs to extend system lifespan.
- Apply safety protocols and risk management practices in hydraulic system operations.
- Demonstrate proficiency in selecting and replacing hydraulic components.

WHO SHOULD ATTEND

- This course is designed for experienced technicians, engineers, and maintenance personnel who are responsible for the installation, maintenance, and troubleshooting of advanced hydraulic systems in industries such as manufacturing, mining, and construction.

COURSE OUTLINE

Day 1: Fundamentals of Hydraulic Systems

- Introduction to hydraulics: Pascal's law, flow, pressure
- Hydraulic fluids: types, viscosity, contamination control
- Hydraulic pumps: gear, vane, piston pumps
- Hydraulic actuators: cylinders and motors
- Control valves: directional, pressure, flow control
- Hydraulic symbols and basic circuit diagrams

Day 2: Hydraulic Components and Circuit Design

- Detailed study of pumps, motors, and cylinders
- Pressure control valves: relief, reducing, sequence
- Flow control valves: meter-in, meter-out, bleed-off
- Accumulators: types, sizing, applications
- Circuit design principles: series, parallel, regenerative
- Component selection criteria and calculations

Day 3: Hydraulic System Troubleshooting and Maintenance

- Common faults: cavitation, aeration, overheating
- Troubleshooting methodology: pressure, flow, temperature
- Contamination control: ISO codes, filtration ratings
- Preventive maintenance: oil analysis, filter changes
- Safety: lockout/tagout, pressure release, PPE
- Case studies: fault finding in typical circuits

Day 4: Advanced Hydraulic Systems and Proportional Control

- Proportional valves: operation, characteristics, applications
- Servo valves: feedback, response, positioning
- Closed-loop control: PID controllers in hydraulics
- Electro-hydraulic interfaces: transducers, amplifiers
- Energy efficiency: load sensing, variable displacement pumps
- System simulation: software tools and analysis

Day 5: Hydraulic System Design Project and Integration

- Project brief: design a hydraulic system (e.g., press, conveyor)
- Component selection and sizing
- Circuit design and schematic creation
- Integration with electrical and PLC controls
- System validation: pressure, flow, power checks
- Presentation and peer 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 **10 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 24,200.00	R 24,200.00
1	In-House	R 31,400.00	R 31,400.00
1	On-Campus (Pretoria)	R 36,200.00	R 36,200.00

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
17 Aug 2026	21 Aug 2026	On-Campus	Harare, Zimbabwe
17 Aug 2026	21 Aug 2026	On-Campus	Shenzhen, China
24 Aug 2026	28 Aug 2026	On-Campus	Bangkok, Thailand
24 Aug 2026	28 Aug 2026	On-Campus	Victoria Falls, Zimbabwe
31 Aug 2026	04 Sep 2026	On-Campus	Lusaka, Zambia
31 Aug 2026	04 Sep 2026	On-Campus	London, UK

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 AATICD-0222) 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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