



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

Hand Tools And Measuring Instruments For Hvacr Trades Training

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 116239 · NQF Level 2 · 12 Credits · 9 Days

COURSE OVERVIEW

This course equips learners with the knowledge and practical skills to safely and effectively select, use, and maintain hand tools and measuring instruments commonly used in HVACR trades. It emphasizes workplace safety, tool care, and accurate measurement to ensure quality workmanship in heating, ventilation, air conditioning, and refrigeration applications.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	116239
Accreditation	SAQA Accredited · NQF Level 2 · 12 Credits
Duration	9 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Identify and describe the purpose of common hand tools and measuring instruments used in HVACR trades.
- Demonstrate correct and safe procedures for using hand tools and measuring instruments in HVACR tasks.
- Apply appropriate measuring techniques to verify dimensions, pressures, temperatures, and electrical values.
- Implement routine maintenance and storage procedures to extend the lifespan of tools and instruments.
- Evaluate tool condition and identify defects or calibration needs to ensure accuracy and safety.

WHO SHOULD ATTEND

- This course is designed for aspiring HVACR technicians, apprentices, and maintenance personnel who require foundational training in hand tools and measuring instruments.
- It is also suitable for experienced tradespeople seeking to refresh their skills and align with SAQA standards.

COURSE OUTLINE

Day 1: Introduction to Hand Tools and Measuring Instruments in HVACR

- Overview of HVACR systems and components.
- Categories of hand tools: wrenches, screwdrivers, pliers, cutters.
- Introduction to measuring instruments: thermometers, pressure gauges, multimeters.
- Tool safety and personal protective equipment (PPE).
- Tool storage and maintenance basics.

Day 2: Hand Tools for Mechanical Fastening and Assembly

- Types of wrenches: open-end, box-end, adjustable, socket.
- Screwdriver types: flathead, Phillips, Torx, hex.
- Pliers: slip-joint, needle-nose, locking.
- Cutting tools: tin snips, hacksaws, tubing cutters.
- Torque specifications and use of torque wrenches.

Day 3: Specialized Hand Tools for HVACR Systems

- Flaring tools and swaging blocks.
- Tubing benders for copper and aluminum.
- Pipe threading dies and taps.
- Refrigeration manifold gauges and hoses.
- Vacuum pumps and micron gauges.
- Leak detection tools: electronic leak detectors, bubble solutions.

Day 4: Measuring Instruments – Temperature and Pressure

- Temperature measurement: bimetallic, thermocouple, RTD, infrared.
- Pressure measurement: Bourdon tube, diaphragm, electronic sensors.
- Manifold gauge sets for high and low side pressure.
- Psychrometers and humidity measurement.
- Calibration procedures and standards.

Day 5: Electrical Measuring Instruments for HVACR

- Digital multimeter (DMM) functions and settings.
- Measuring AC/DC voltage and current.
- Resistance and continuity testing.
- Capacitor testing with capacitance meters.
- Clamp meters for in-circuit current measurement.
- Safety precautions when working with electricity.

Day 6: Airflow and Combustion Measuring Instruments

- Anemometers: vane, hot-wire, and thermal types.
- Manometers: digital and inclined tube for pressure differential.
- Pitot tubes and airflow measurement.
- Combustion analyzers: O₂, CO₂, CO, temperature.
- Draft gauges and pressure switches.
- Indoor air quality instruments: CO detectors, particle counters.

Day 7: Precision Measurement and Layout Tools

- Micrometers: outside, inside, depth.

- Calipers: vernier, dial, digital.
- Levels: spirit, laser, digital.
- Combination squares and protractors.
- Thread pitch gauges and drill bit gauges.
- Tape measures and rulers for layout.
- Temperature and humidity data loggers.

Day 8: Tool Maintenance, Calibration, and Safety

- Cleaning and lubricating tools.
- Sharpening cutting tools.
- Replacing batteries and fuses.
- Calibration intervals and records.
- Tool inspection for damage.
- Electrical safety for instruments.
- Lockout/tagout procedures.
- Fire safety and first aid for tool-related injuries.

Day 9: Practical Integration and Assessment

- Hands-on fault diagnosis using manifold gauges, multimeters, and thermometers.
- Measuring superheat and subcooling.
- Checking electrical components: contactors, relays, motors.
- Airflow measurement and adjustment.
- Combustion analysis for gas furnaces.
- Final practical assessment.
- Review of key concepts and Q&A;

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 **12 NQF credits** at **NQF Level 2**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 33,300.00	R 33,300.00
1	In-House	R 43,300.00	R 43,300.00
1	On-Campus (Pretoria)	R 50,000.00	R 50,000.00

UPCOMING SESSIONS

Start	End	Method	Venue
05 Aug 2026	17 Aug 2026	On-Campus	Cape Town, South Africa
06 Aug 2026	18 Aug 2026	On-Campus	Dubai, UAE
07 Aug 2026	19 Aug 2026	On-Campus	Pretoria, South Africa
07 Aug 2026	19 Aug 2026	On-Campus	Lagos, Nigeria
10 Aug 2026	20 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	20 Aug 2026	On-Campus	Mauritius
11 Aug 2026	21 Aug 2026	On-Campus	Cape Town, South Africa
12 Aug 2026	24 Aug 2026	On-Campus	Dubai, UAE

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 116239) 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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