



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

Industrial Automation

Custom Courses / Instrumentation & Automation

Unit Standard AATICD-0231 · NQF Level 5 · 10 Credits · 5 Days

COURSE OVERVIEW

This course provides a comprehensive understanding of industrial automation systems, including programmable logic controllers (PLCs), sensors, actuators, and human-machine interfaces. Learners will gain practical skills to design, implement, and maintain automated systems in manufacturing and process industries.

Category	Custom Courses
Subfield	Instrumentation & Automation
Unit Standard	AATICD-0231
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

- Apply principles of industrial automation to design basic automated systems.
- Analyze the operation of PLCs, sensors, and actuators in a control system.
- Implement ladder logic programs for PLC-based control applications.
- Evaluate the performance of automated systems and identify areas for improvement.
- Demonstrate the ability to troubleshoot common automation faults.
- Design a simple human-machine interface (HMI) for monitoring and control.

WHO SHOULD ATTEND

- This course is designed for engineers, technicians, and professionals involved in manufacturing, process control, or maintenance who seek to enhance their knowledge of industrial automation.

COURSE OUTLINE

Day 1: Fundamentals of Industrial Automation

- Introduction to industrial automation: definitions, benefits, and applications
- Overview of automation components: controllers, sensors, actuators, HMIs
- Basic control theory: open-loop vs closed-loop control
- Types of automation: fixed, programmable, and flexible automation
- Safety considerations in automation
- Industry 4.0 and the role of automation in smart factories

Day 2: Sensors, Actuators, and Control Devices

- Sensors: proximity, temperature, pressure, flow, level, and vision sensors
- Actuators: electric motors, hydraulic and pneumatic cylinders, solenoids
- Introduction to PLCs: architecture, programming basics (ladder logic)
- Input/Output modules and signal conditioning
- Wiring and connection of sensors and actuators to PLCs
- Hands-on: simple sensor-actuator circuit assembly

Day 3: PLC Programming and HMI Design

- Advanced PLC programming: timers, counters, comparators, math instructions
- HMI design principles: screen layout, navigation, alarms
- Communication between PLC and HMI
- Sequential function charts and state machines
- Practical exercise: program a simple conveyor system with HMI control

Day 4: Industrial Networks and System Integration

- Industrial communication protocols: Profibus, Modbus, Ethernet/IP
- Network topologies and media (wired, wireless)
- Setting up a small network with PLCs, HMIs, and drives
- System integration: combining sensors, actuators, controllers, and networks
- Troubleshooting: common network faults and diagnostic tools
- Case study: integrating a robotic arm with a PLC

Day 5: Advanced Applications, Safety, and Project Work

- Safety standards: ISO 13849, IEC 62061, safety PLCs
- SCADA basics: data acquisition, trending, alarms
- Energy efficiency in automation
- Mini-project: design and simulate an automated sorting station
- Project presentations and peer feedback
- Course review and assessment

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-0231) 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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