



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

Integrate A Process Control System Training

Manufacturing, Engineering and Technology / Engineering and Related Design

Unit Standard 119803 · NQF Level 5 · 12 Credits · 9 Days

COURSE OVERVIEW

This course equips learners with the skills to integrate a process control system into an industrial environment. It covers planning, configuration, testing, and commissioning of process control systems to ensure seamless operation and compliance with industry standards.

Category	Manufacturing, Engineering and Technology
Subfield	Engineering and Related Design
Unit Standard	119803
Accreditation	SAQA Accredited · NQF Level 5 · 12 Credits
Duration	9 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply relevant standards and procedures to plan the integration of a process control system.
- Configure hardware and software components of a process control system according to specifications.
- Implement communication protocols to link field devices with the control system.
- Test and verify the integrated system to ensure functionality and safety.
- Analyze system performance and troubleshoot integration issues.
- Document the integration process and provide handover documentation.

WHO SHOULD ATTEND

- This course is designed for automation engineers, control system technicians, and process engineers who are responsible for integrating or upgrading process control systems in manufacturing, chemical, or utility industries.

COURSE OUTLINE

Day 1: Introduction to Process Control Systems

- Overview of process control in manufacturing
- Components: sensors, controllers, actuators, final control elements
- Open vs closed loop control
- Feedback and feedforward control
- Safety and efficiency benefits

Day 2: Sensors and Measurement Devices

- Temperature sensors: thermocouples, RTDs, thermistors
- Pressure sensors: strain gauge, capacitive
- Flow measurement: differential pressure, magnetic, ultrasonic
- Level measurement: radar, ultrasonic, capacitance
- Signal types: 4-20 mA, digital, fieldbus

Day 3: Controllers and Control Algorithms

- On/off control vs proportional control
- Integral and derivative actions
- PID controller tuning: Ziegler-Nichols, trial and error
- Effects of P, I, D on system response
- Limitations and tuning considerations

Day 4: Final Control Elements and Actuators

- Control valves: globe, butterfly, ball
- Actuators: pneumatic, electric, hydraulic
- Valve positioners and characteristics
- Variable frequency drives for pumps and fans
- Safety considerations: fail-safe modes

Day 5: Programmable Logic Controllers (PLCs) and Distributed Control Systems (DCS)

- PLC components: CPU, I/O modules, power supply
- Ladder logic basics
- DCS architecture: controllers, servers, operator stations
- Communication protocols: Modbus, Profibus, Foundation Fieldbus
- Redundancy and reliability

Day 6: Human-Machine Interface (HMI) and SCADA Systems

- HMI design principles: navigation, alarms, trends
- Creating graphic displays
- SCADA architecture: RTUs, MTUs, communication
- Data acquisition and logging
- Alarm management and historian

Day 7: Process Control Integration and Networking

- Integration levels: field, control, supervisory, enterprise
- Industrial Ethernet and fieldbus networks
- OPC DA, UA, and HDA
- System interoperability

- Troubleshooting integration issues

Day 8: Safety Instrumented Systems (SIS) and Standards

- Functional safety standards: IEC 61508, IEC 61511
- Safety instrumented functions
- SIL determination: risk graph, LOPA
- Safety system design: redundancy, diagnostics
- Proof testing and maintenance

Day 9: Practical Integration Project and Assessment

- Hands-on project: temperature control loop
- PLC programming and HMI development
- Loop tuning and optimization
- System testing and troubleshooting
- Final presentation 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 **12 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 35,000.00	R 35,000.00
1	In-House	R 45,500.00	R 45,500.00
1	On-Campus (Pretoria)	R 52,500.00	R 52,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	13 Aug 2026	On-Campus	Dubai, UAE
04 Aug 2026	14 Aug 2026	On-Campus	Pretoria, South Africa
04 Aug 2026	14 Aug 2026	On-Campus	Lagos, Nigeria
05 Aug 2026	17 Aug 2026	On-Campus	Johannesburg, South Africa
06 Aug 2026	18 Aug 2026	On-Campus	Mauritius
07 Aug 2026	19 Aug 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	20 Aug 2026	On-Campus	Pretoria, South Africa
11 Aug 2026	21 Aug 2026	On-Campus	Abu Dhabi, 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 119803) 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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