



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

Tel: +27 12 004 8389 · Mobile: +27 65 077 6310

Email: apply@aaticd.co.za · Website: www.aaticd.co.za

COURSE BROCHURE

Production Process Control

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 259694 · NQF Level 4 · 25 Credits · 22 Days

COURSE OVERVIEW

This course equips learners with the skills to monitor, control, and optimize a production process within a manufacturing or operational environment. Participants will learn to apply quality control measures, interpret production data, and implement corrective actions to ensure efficiency and compliance with standards.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	259694
Accreditation	SAQA Accredited · NQF Level 4 · 25 Credits
Duration	22 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Monitor production processes to identify deviations from set parameters.
- Analyze production data to determine process performance and areas for improvement.
- Implement corrective actions to bring processes back within specification.
- Apply quality control principles to ensure product consistency and compliance.
- Document process control activities and report findings to relevant stakeholders.
- Evaluate the effectiveness of process control measures and recommend adjustments.

WHO SHOULD ATTEND

- This course is designed for production supervisors, team leaders, and operators who are responsible for overseeing and controlling production processes in manufacturing, assembly, or processing industries.

COURSE OUTLINE

Day 1: Introduction to Production Process Control

- Overview of production process control.
- Elements of a production system: inputs, processes, outputs.
- Importance of control in manufacturing.
- Basic control concepts: feedback, feedforward.
- Introduction to process variables (temperature, pressure, flow, level).

Day 2: Process Control Fundamentals

- Sensors and transmitters.
- Controllers and final control elements.
- Control loop diagrams.
- Open-loop and closed-loop systems.
- Examples of simple control loops.

Day 3: Measurement and Instrumentation

- Temperature measurement: thermocouples, RTDs.
- Pressure measurement: gauges, transmitters.
- Flow measurement: orifice plates, flowmeters.
- Level measurement: differential pressure, radar.
- Calibration procedures and standards.

Day 4: Control System Components

- Programmable Logic Controllers (PLCs).
- Distributed Control Systems (DCS).
- PID controllers: proportional, integral, derivative.
- Actuators: valves, motors, pumps.
- Signal types and wiring.

Day 5: Process Dynamics and Modeling

- Dynamic behavior of processes.
- Time constants and dead time.
- Step response analysis.
- Simple mathematical models.
- Model identification basics.

Day 6: PID Controller Tuning

- Manual tuning techniques.
- Ziegler-Nichols open-loop and closed-loop methods.
- Cohen-Coon method.
- Effects of tuning parameters on performance.
- Common tuning rules.

Day 7: Advanced Control Strategies

- Cascade control: inner and outer loops.
- Feedforward control for disturbance rejection.
- Ratio control for blending.
- Override control for safety.

- Split-range control for multiple actuators.

Day 8: Batch Process Control

- Batch vs continuous processes.
- Batch control phases: charging, reaction, discharge.
- Recipe structure and management.
- Sequential control.
- Batch records and traceability.

Day 9: Process Safety and Instrumented Systems

- Hazard and risk assessment (HAZOP).
- Layers of protection analysis (LOPA).
- Safety integrity levels (SIL).
- SIS components: sensors, logic solvers, final elements.
- Fail-safe design principles.

Day 10: Quality Control and Statistical Process Control (SPC)

- Variation: common cause vs special cause.
- Control charts: X-bar, R, p, etc.
- Process capability: Cp, Cpk.
- Sampling plans.
- SPC software tools.

Day 11: Industrial Communication and Networking

- Serial communication: RS-232, RS-485.
- Fieldbus protocols.
- Industrial Ethernet.
- SCADA systems architecture.
- OPC and data exchange.

Day 12: Human-Machine Interface (HMI) and Operator Training

- HMI design guidelines.
- Alarm philosophy and rationalization.
- Operator interface: trends, setpoints.
- Human factors in control rooms.
- Operator training and competencies.

Day 13: PLC Programming Fundamentals

- PLC hardware and memory organization.
- Ladder logic: contacts, coils, timers, counters.
- Basic instructions: AND, OR, NOT.
- Programming software and simulation.
- Debugging techniques.

Day 14: SCADA and Data Acquisition

- SCADA architecture: RTU, MTU, communication.
- Tag configuration and database.
- Trending and historical data.
- Alarm and event management.
- Remote monitoring.

Day 15: Process Optimization and Efficiency

- Overall Equipment Effectiveness (OEE).
- Lean manufacturing principles.
- Six Sigma DMAIC.
- Energy efficiency in processes.
- Continuous improvement methods.

Day 16: Troubleshooting and Maintenance of Control Systems

- Troubleshooting methodology.
- Common faults: sensor drift, valve sticking.
- Loop checking and validation.
- Preventive and predictive maintenance.
- Spare parts management.

Day 17: Regulatory Compliance and Standards

- Occupational Health and Safety Act (OHSA).
- SANS 10160 and other standards.
- ISO 9001: Quality management.
- ISO 14001: Environmental management.
- Documentation: SOPs, batch records.

Day 18: Case Studies in Production Process Control

- Case study 1: Chemical reactor control.
- Case study 2: Boiler control.
- Case study 3: Distillation column control.
- Group discussions and presentations.
- Root cause analysis.

Day 19: Integrated Project – Design a Control System

- Project brief and process description.
- Control objective definition.
- Instrument selection (sensors, valves).
- Control loop configuration.
- Control narrative and P&ID; markup.

Day 20: Project Presentation and Course Review

- Team presentations (15-20 min each).
- Q&A; and feedback.
- Summary of key learning points.
- Final assessment.
- Course evaluation and certificates.

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 **25 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 66,600.00	R 66,600.00
1	In-House	R 86,600.00	R 86,600.00
1	On-Campus (Pretoria)	R 99,900.00	R 99,900.00

UPCOMING SESSIONS

Start	End	Method	Venue
04 Aug 2026	02 Sep 2026	On-Campus	Dubai, UAE
05 Aug 2026	03 Sep 2026	On-Campus	Pretoria, South Africa
05 Aug 2026	03 Sep 2026	On-Campus	Lagos, Nigeria
06 Aug 2026	04 Sep 2026	On-Campus	Johannesburg, South Africa
07 Aug 2026	07 Sep 2026	On-Campus	Mauritius
10 Aug 2026	08 Sep 2026	On-Campus	Dubai, UAE
11 Aug 2026	09 Sep 2026	On-Campus	Pretoria, South Africa
12 Aug 2026	10 Sep 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 259694) 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.

Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza, 1122 Burnett St, Hatfield 0028, Pretoria, Gauteng, South Africa
Tel: +27 12 004 8389 · WhatsApp: +27 65 077 6310 · apply@aaticd.co.za · www.aaticd.co.za