



## 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

# Power and Automation Systems

Custom Courses / Instrumentation & Automation

Unit Standard AATICD-0232 · NQF Level 5 · 10 Credits · 5 Days

## COURSE OVERVIEW

This course equips learners with the knowledge and skills to design, implement, and maintain power and automation systems in industrial and commercial environments. Participants will gain hands-on experience with control systems, programmable logic controllers (PLCs), and power distribution technologies to optimize operational efficiency and safety.

|                 |                                            |
|-----------------|--------------------------------------------|
| Category        | Custom Courses                             |
| Subfield        | Instrumentation & Automation               |
| Unit Standard   | AATICD-0232                                |
| 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 power distribution and control to design automated systems.
- Analyze and troubleshoot power and automation circuits using appropriate diagnostic tools.
- Evaluate system performance and recommend improvements for energy efficiency and reliability.
- Design and implement programmable logic controller (PLC) programs for industrial automation tasks.
- Demonstrate compliance with safety standards and regulations in power and automation installations.
- Integrate sensors, actuators, and human-machine interfaces (HMIs) into automated systems.

## WHO SHOULD ATTEND

- This course is designed for electrical engineers, automation technicians, and maintenance professionals seeking to upgrade their skills in power and automation systems.
- It is also suitable for individuals transitioning into industrial automation roles.

## COURSE OUTLINE

### Day 1: Fundamentals of Electrical Power

- Introduction to electrical power systems
- Basic electrical quantities and units
- Ohm's law and Kirchhoff's laws
- Electrical diagrams and symbols
- Overview of power generation, transmission, and distribution
- Safety principles in power systems

### Day 2: Power Distribution and Protection

- Low-voltage switchgear and distribution boards
- Circuit breakers, fuses, and relays
- Overcurrent and earth fault protection principles
- Protection coordination and selectivity
- Cable sizing and voltage drop considerations
- Earthing systems and bonding

### Day 3: Introduction to Automation and Control

- Automation fundamentals and control hierarchies
- Sensors: proximity, temperature, pressure, flow
- Actuators: motors, solenoids, valves
- Introduction to PLCs: architecture and operation
- Basic ladder logic programming
- Human-machine interfaces (HMIs) basics

### Day 4: Motor Control and Variable Speed Drives

- AC and DC motors: characteristics and applications
- Motor starting methods: DOL, star-delta, soft starters
- Variable speed drives: principles and configurations
- Motor control circuits: contactors, overloads, interlocks
- Drive parameter setting and commissioning
- Motor and drive fault diagnosis

### Day 5: Integrated Power and Automation Systems

- SCADA systems: architecture and communication protocols
- Integration of PLCs with power distribution
- System testing, commissioning, and documentation
- Energy management and power quality improvement
- Case studies: industrial automation projects
- 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](http://www.aaticd.co.za), open the page for this course (Unit Standard AATICD-0232) 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](mailto: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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