



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

Refinery Operations Control And Process Management Training

Agriculture and Nature Conservation / Secondary Agriculture

Unit Standard 114328 · NQF Level 4 · 15 Credits · 12 Days

COURSE OVERVIEW

This course equips learners with the skills to control and manage refinery operations effectively, ensuring optimal process performance, safety, and regulatory compliance. Participants will gain a deep understanding of process control systems, operational strategies, and quality management principles specific to refinery environments.

Category	Agriculture and Nature Conservation
Subfield	Secondary Agriculture
Unit Standard	114328
Accreditation	SAQA Accredited · NQF Level 4 · 15 Credits
Duration	12 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply process control principles to monitor and adjust refinery operations for efficiency and safety.
- Analyze operational data to identify deviations and implement corrective actions.
- Evaluate process performance against quality and production targets.
- Design operational procedures to improve process stability and throughput.
- Implement maintenance and troubleshooting strategies for process equipment.
- Demonstrate compliance with health, safety, and environmental regulations in refinery operations.

WHO SHOULD ATTEND

- This course is designed for refinery supervisors, process controllers, operations managers, and technical staff involved in the day-to-day control and management of refinery processes.

COURSE OUTLINE

Day 1: Introduction to Refinery Operations and Safety

- Overview of petroleum refining industry in South Africa
- SAQA and NQF framework for process operations
- Fundamental safety standards (OHS Act, SANS
- Introduction to refinery layout and process units
- Environmental protection and waste management basics
- Personal protective equipment (PPE) requirements
- Emergency response procedures overview
- Course structure and assessment criteria

Day 2: Process Fundamentals and Thermodynamics

- Properties of crude oil and petroleum products
- Phase diagrams and vapour-liquid equilibrium
- Heat transfer principles in refinery equipment
- Mass and energy conservation laws
- Pressure, temperature, and flow relationships
- Basic process calculations and unit conversions
- Introduction to process simulation concepts
- Properties measurement techniques

Day 3: Distillation Processes and Column Operations

- Principles of fractional distillation
- Atmospheric and vacuum distillation units
- Column internals and tray design
- Reflux ratio and boil-up calculations
- Product draw-off and side-stream operations
- Pressure and temperature control strategies
- Flooding, weeping, and foaming prevention
- Startup, shutdown, and emergency procedures

Day 4: Conversion Processes: Catalytic Cracking and Reforming

- Fluid catalytic cracking (FCC) fundamentals
- Catalytic reforming processes and catalysts
- Hydrocracking principles and applications
- Catalyst deactivation and regeneration cycles
- Reactor temperature and pressure control
- Product selectivity and yield optimisation
- Safety considerations in conversion units
- Environmental controls for emissions

Day 5: Treatment Processes and Product Quality

- Hydrotreating and desulphurisation processes
- Sweetening and mercaptan removal
- Product blending and additive injection
- Quality testing and laboratory analysis
- Specification compliance monitoring

- Contamination prevention and control
- Storage and handling of finished products
- Product certification and documentation

Day 6: Heat Exchange and Utility Systems

- Heat exchanger types and applications
- Fired heaters and boilers operation
- Cooling water and air cooler systems
- Steam generation and distribution
- Fuel gas and instrument air systems
- Energy integration and pinch analysis basics
- Fouling prevention and cleaning procedures
- Utility system emergency response

Day 7: Instrumentation and Basic Process Control

- Pressure, temperature, level, and flow measurement
- Control valve types and characteristics
- PID controller fundamentals and tuning
- Single-loop control strategies
- Alarm management and prioritisation
- Instrument calibration procedures
- Field instrument maintenance basics
- Safety instrumented systems introduction

Day 8: Advanced Process Control and Optimization

- DCS architecture and operator interfaces
- Cascade, ratio, and feedforward control
- Model predictive control fundamentals
- Real-time optimisation strategies
- Advanced alarm management systems
- Historical data trending and analysis
- Performance monitoring and KPI tracking
- Integration with business systems

Day 9: Process Troubleshooting and Problem Solving

- Systematic troubleshooting approaches
- Root cause analysis techniques
- Process deviation identification
- Emergency response to process upsets
- Equipment malfunction diagnosis
- Process data analysis for problem solving
- Corrective action implementation
- Incident reporting and documentation

Day 10: Operational Excellence and Performance Management

- Operational excellence frameworks
- Key performance indicator development
- Statistical process control applications

- Reliability-centred maintenance principles
- Continuous improvement methodologies
- Benchmarking and best practices
- Cost control and economic optimisation
- Sustainability performance metrics

Day 11: Integrated Process Management and Simulation

- Plant-wide process integration
- Process simulation software applications
- Material and energy balance across units
- Production planning and scheduling
- Integrated safety management systems
- Environmental performance monitoring
- Inter-unit communication and coordination
- Whole-plant optimisation strategies

Day 12: Assessment Integration and Professional Practice

- Comprehensive case study analysis
- Integrated process control scenarios
- Professional decision-making exercises
- Workplace application planning
- Continuous professional development planning
- Regulatory compliance implementation
- Knowledge integration assessment
- Course review and competency verification

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 **15 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 41,000.00	R 41,000.00
1	In-House	R 53,300.00	R 53,300.00
1	On-Campus (Pretoria)	R 61,500.00	R 61,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
07 Aug 2026	24 Aug 2026	On-Campus	Dubai, UAE
10 Aug 2026	25 Aug 2026	On-Campus	Abu Dhabi, UAE
11 Aug 2026	26 Aug 2026	On-Campus	Durban, South Africa
11 Aug 2026	26 Aug 2026	On-Campus	Mauritius
12 Aug 2026	27 Aug 2026	On-Campus	Cape Town, South Africa
13 Aug 2026	28 Aug 2026	On-Campus	Dubai, UAE
14 Aug 2026	31 Aug 2026	On-Campus	Pretoria, South Africa
17 Aug 2026	01 Sep 2026	On-Campus	Durban, South Africa

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 114328) 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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