



## 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

# Operations and Maintenance of Water Services Work

Custom Courses / Environment Monitoring, Evaluation & Research

Unit Standard AATICD-0262 · NQF Level 5 · 20 Credits · 10 Days

## COURSE OVERVIEW

This course equips learners with the knowledge and skills to operate and maintain water services works effectively, ensuring compliance with South African regulations and standards. Participants will gain practical expertise in managing water supply and sanitation systems, focusing on safety, efficiency, and sustainability. The training is designed to enhance the capacity of technical staff to deliver reliable water services to communities.

|                 |                                               |
|-----------------|-----------------------------------------------|
| Category        | Custom Courses                                |
| Subfield        | Environment Monitoring, Evaluation & Research |
| Unit Standard   | AATICD-0262                                   |
| Accreditation   | SAQA Accredited · NQF Level 5 · 20 Credits    |
| Duration        | 10 days                                       |
| Training Method | Online, On-Campus, In-House                   |
| Certificate     | Issued via AATICD LMS – verifiable online     |

## LEARNING OUTCOMES

- Apply principles of water services works operation to ensure safe and efficient functioning of systems.
- Analyze water quality parameters and treatment processes to maintain compliance with SANS 241 standards.
- Evaluate maintenance schedules and procedures to optimize asset lifecycle and reduce downtime.
- Implement occupational health and safety protocols in water services environments.
- Demonstrate the ability to record and report operational data accurately for regulatory purposes.

## WHO SHOULD ATTEND

- This course is intended for water services technicians, operators, and maintenance personnel working in municipal or private water utilities, as well as supervisors responsible for overseeing water works operations.

## COURSE OUTLINE

### Day 1: Introduction to Water Services Operations

- Overview of the Water Services Act and relevant regulations
- Components of water supply and sanitation systems
- Roles of operators, maintainers, and supervisors
- Introduction to occupational health and safety in water services
- PPE selection and use
- Basic hazard identification and risk assessment

### Day 2: Water Treatment Processes

- Raw water sources and quality
- Coagulation and flocculation principles
- Sedimentation and clarification
- Filtration (rapid gravity, slow sand, membrane)
- Disinfection (chlorination, UV, ozonation)
- pH, turbidity, chlorine residual testing
- Sampling techniques and chain of custody

### Day 3: Wastewater Treatment Fundamentals

- Wastewater characteristics and collection systems
- Preliminary treatment (screening, grit removal)
- Primary sedimentation
- Biological treatment: activated sludge, trickling filters, oxidation ponds
- Secondary clarification
- Tertiary treatment and disinfection
- Sludge thickening, digestion, and dewatering
- Effluent standards and monitoring

### Day 4: Pumping Systems and Hydraulics

- Centrifugal, positive displacement, and submersible pumps
- Pump components and seals
- System head curves and operating points
- Net positive suction head (NPSH)
- Pump sizing and selection basics
- VFD and control systems
- Routine pump inspection and troubleshooting

### Day 5: Pipe Networks and Valves

- Pipe materials (PVC, HDPE, ductile iron, steel)
- Pipe jointing and laying techniques
- Valve types (gate, globe, butterfly, check, air release)
- Valve operation and maintenance
- Flow measurement devices (meters, weirs)
- Pressure and leakage management
- Hydrant and fire flow requirements

### Day 6: Electrical and Control Systems for Water Services

- Electrical safety and lockout/tagout
- Single-phase and three-phase power
- Motor starters (DOL, star-delta, VSD)
- Control panels and PLC basics
- SCADA system components and functions
- Sensors and transmitters (level, flow, pressure)
- Alarm and shutdown systems
- Basic fault finding and testing

#### **Day 7: Preventive and Corrective Maintenance**

- Maintenance strategies (reactive, preventive, predictive)
- Lubrication schedules and techniques
- Bearing and seal replacement
- Belt and chain drives
- Corrosion control and cathodic protection
- Maintenance planning and scheduling tools
- Work orders and documentation
- Spare parts management

#### **Day 8: Water Quality Monitoring and Compliance**

- SANS 241:2015 and microbiological limits
- Sampling plans and procedures
- Field testing (pH, turbidity, chlorine, conductivity)
- Laboratory testing (coliforms, metals, chemicals)
- Data recording and trend analysis
- Corrective actions for non-compliance
- Reporting to regulatory bodies

#### **Day 9: Emergency Response and Safety Procedures**

- Emergency planning and communication
- Burst main repair procedures
- Chemical spill containment and cleanup
- Power outage contingency plans
- Confined space entry permits and safety
- Fall protection and rescue
- First aid and CPR refresher
- Incident reporting and investigation

#### **Day 10: Integrated Operations and Final Assessment**

- Case studies of water service operations
- Group problem-solving exercises
- Written assessment covering all topics
- Practical skills demonstration
- Review of key concepts and Q&A;
- Course evaluation and feedback
- Certification requirements

## 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 **20 NQF credits** at **NQF Level 5**.

## PRICING (PER DELEGATE, EX-VAT)

| Delegates | Training Method      | Price per Delegate | Total       |
|-----------|----------------------|--------------------|-------------|
| 1         | Online               | R 37,600.00        | R 37,600.00 |
| 1         | In-House             | R 48,800.00        | R 48,800.00 |
| 1         | On-Campus (Pretoria) | R 56,400.00        | R 56,400.00 |

## UPCOMING SESSIONS

| Start       | End         | Method    | Venue                    |
|-------------|-------------|-----------|--------------------------|
| 12 Aug 2026 | 25 Aug 2026 | On-Campus | Durban, South Africa     |
| 12 Aug 2026 | 25 Aug 2026 | On-Campus | Abu Dhabi, UAE           |
| 20 Aug 2026 | 02 Sep 2026 | On-Campus | Harare, Zimbabwe         |
| 20 Aug 2026 | 02 Sep 2026 | On-Campus | Shenzhen, China          |
| 28 Aug 2026 | 10 Sep 2026 | On-Campus | Victoria Falls, Zimbabwe |
| 28 Aug 2026 | 10 Sep 2026 | On-Campus | Bangkok, Thailand        |
| 31 Aug 2026 | 11 Sep 2026 | On-Campus | Lusaka, Zambia           |
| 31 Aug 2026 | 11 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-0262) 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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