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

Hydropower Systems

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0485 · NQF Level 5 · 4 Credits · 2 Days

COURSE OVERVIEW

This course equips participants with the fundamental knowledge and practical skills required to understand, operate, and maintain hydropower systems. It covers the principles of hydropower generation, system components, performance analysis, and safety protocols, enabling learners to contribute effectively to the renewable energy sector.

Category	Custom Courses
Subfield	Energy, Oil and Gas
Unit Standard	AATICD-0485
Accreditation	SAQA Accredited · NQF Level 5 · 4 Credits
Duration	2 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Apply the fundamental principles of hydropower generation to analyse system performance.
- Analyse the components of a hydropower plant and their functions in the conversion of water energy to electrical energy.
- Evaluate the environmental and economic impacts of hydropower projects.
- Design a basic hydropower system layout considering site-specific factors.
- Implement safety protocols and maintenance procedures for hydropower equipment.
- Demonstrate proficiency in monitoring and troubleshooting hydropower system operations.

WHO SHOULD ATTEND

- This course is designed for technicians, engineers, and energy professionals seeking to specialise in hydropower technology, as well as for individuals interested in renewable energy systems and sustainable power generation.

COURSE OUTLINE

Day 1: **Fundamentals of Hydropower Systems**

- Introduction to hydropower: history, global and South African context.
- The water cycle and hydrology basics.
- Types of hydropower: run-of-river, storage, pumped storage, and micro/micro-hydro.
- Key components: dam, intake, penstock, turbine, generator, and tailrace.
- Turbine types: Pelton, Francis, Kaplan, and cross-flow.
- Basic hydraulic principles: head, flow, and power equation.
- Environmental and social impacts of hydropower.
- Overview of South African hydropower installations and regulations.

Day 2: **Design, Operation, and Maintenance**

- Hydrological assessment: flow duration curves, head measurement.
- Site selection and feasibility studies.
- Design of civil works: dams, intakes, and penstocks.
- Selection of turbines and generators.
- Electrical systems: control, protection, and grid connection.
- Operational procedures: start-up, shut-down, and load management.
- Maintenance strategies: preventive, predictive, and corrective.
- Safety and environmental compliance in hydropower operations.

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 **4 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 11,900.00	**R 11,900.00**
1	In-House	R 16,100.00	**R 16,100.00**
1	On-Campus (Pretoria)	R 17,800.00	**R 17,800.00**

UPCOMING SESSIONS

Start	End	Method	Venue
01 Dec 2026	02 Dec 2026	On-Campus	Victoria Falls, Zimbabwe
01 Dec 2026	02 Dec 2026	On-Campus	Cape Town, South Africa
02 Dec 2026	03 Dec 2026	On-Campus	Shenzhen, China
02 Dec 2026	03 Dec 2026	On-Campus	Lagos, Nigeria
03 Dec 2026	04 Dec 2026	On-Campus	Durban, South Africa
08 Dec 2026	09 Dec 2026	On-Campus	Maseru, Lesotho
08 Dec 2026	09 Dec 2026	On-Campus	Kigali, Rwanda
08 Dec 2026	09 Dec 2026	On-Campus	Accra, Ghana

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTATION OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard AATICD-0485) and click **Get A Quotation**. 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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