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

# Fuel Cell Technology

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0545 · NQF Level 5 · 4 Credits · 2 Days

## COURSE OVERVIEW

This course provides a comprehensive understanding of fuel cell technology, including its principles, types, applications, and environmental impact. Participants will gain the knowledge and skills needed to evaluate, implement, and manage fuel cell systems in various industries, contributing to sustainable energy solutions.

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|---|---|
| Category | Custom Courses |
| Subfield | Energy, Oil and Gas |
| Unit Standard | AATICD-0545 |
| 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 electrochemistry to explain how fuel cells generate electricity.
- Analyze different types of fuel cells (PEMFC, SOFC, PAFC, etc.) and compare their characteristics, efficiencies, and applications.
- Evaluate the environmental and economic benefits and challenges of fuel cell technology in various contexts.
- Design a basic fuel cell system layout, including balance of plant components, for a specified application.
- Implement safety protocols and handling procedures for hydrogen and other fuel cell fuels.
- Demonstrate the ability to perform basic diagnostics and troubleshooting on fuel cell systems.

## WHO SHOULD ATTEND

- This course is designed for engineers, technicians, energy managers, and professionals seeking to expand their expertise in alternative energy technologies.
- It is also suitable for individuals involved in project planning, policy development, or maintenance of fuel cell systems.

## COURSE OUTLINE

Day 1: **Fundamentals of Fuel Cell Technology**

- Introduction to fuel cells: history and current applications.
- Electrochemical principles: oxidation, reduction, and cell potential.
- Types of fuel cells: PEMFC, SOFC, PAFC, MCFC, AFC, DMFC.
- Fuel cell components: electrodes, electrolytes, catalysts, and bipolar plates.
- Fuel cell performance: polarization curves and efficiency.
- Fuel processing: hydrogen production, storage, and safety.
- Applications and market overview.
- Regulatory and standards framework in South Africa.

Day 2: **System Design, Applications, and Practical Integration**

- System design: stack configuration, thermal management, and water management.
- Power electronics: DC-DC converters, inverters, and grid integration.
- Hydrogen infrastructure: production, distribution, and refuelling stations.
- Applications: stationary power, transportation, portable devices, and backup power.
- Case studies: fuel cell projects in South Africa and globally.
- Economic analysis: cost, lifecycle, and return on investment.
- Safety and troubleshooting: common faults, diagnostics, and mitigation.
- Future trends and research directions.

## 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-0545) 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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