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

Hydrogen Production Technologies

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0541 · NQF Level 5 · 6 Credits · 3 Days

COURSE OVERVIEW

This course equips learners with a comprehensive understanding of hydrogen production technologies, from established methods like steam methane reforming to emerging green hydrogen pathways. It covers the scientific principles, operational requirements, and economic and environmental considerations, enabling learners to evaluate and apply suitable technologies in various contexts.

Category	Custom Courses
Subfield	Energy, Oil and Gas
Unit Standard	AATICD-0541
Accreditation	SAQA Accredited · NQF Level 5 · 6 Credits
Duration	3 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Apply fundamental principles of chemistry and thermodynamics to hydrogen production processes.
- Analyze the technical and economic feasibility of different hydrogen production technologies.
- Evaluate the environmental impact and sustainability of various hydrogen production routes.
- Design a basic hydrogen production system for a given application.
- Implement safety and operational procedures for hydrogen production facilities.
- Demonstrate the ability to select appropriate hydrogen production technology based on specific criteria.

WHO SHOULD ATTEND

- This course is designed for engineers, energy professionals, project managers, and technical staff involved in the energy sector, as well as those seeking to transition into the hydrogen economy.

COURSE OUTLINE

Day 1: **Fundamentals of Hydrogen and Production Pathways**

- Introduction to hydrogen: properties, uses, and energy carrier potential
- Overview of hydrogen production pathways: thermochemical, electrochemical, and biological
- Steam methane reforming (SMR) and autothermal reforming (ATR
- Electrolysis technologies: alkaline, PEM, and solid oxide
- Coal gasification and biomass gasification
- Carbon capture, utilization, and storage (CCUS) in hydrogen production
- Hydrogen colour taxonomy and lifecycle emissions
- South African Hydrogen Society Roadmap and regulatory framework

Day 2: **Electrolysis Systems and Process Design**

- Alkaline electrolysis: chemistry, stack design, and operation
- PEM electrolysis: membrane, catalysts, and challenges
- Solid oxide electrolysis: high-temperature operation and applications
- System components: power supply, water treatment, gas separation, and drying
- Efficiency metrics: specific energy consumption, stack efficiency, and system efficiency
- Sizing and scaling: from kW to MW and GW
- Integration with solar and wind: variability and load management
- Safety in electrolysis: hydrogen handling, electrical safety, and risk mitigation

Day 3: **Advanced Production Routes, Economics, and Applications**

- Emerging technologies: photocatalysis, thermochemical cycles, and biological production
- Hydrogen storage and transport: compression, liquefaction, and carriers (ammonia, LOHC
- Levelised cost of hydrogen: capital, operational, and feedstock costs
- Market trends and investment opportunities
- Case studies: Sasol, Anglo American, and other South African initiatives
- Hydrogen in fuel cells: transportation and stationary power
- Environmental impact assessment and lifecycle analysis
- Roadmap for workforce development and skills in the hydrogen economy

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 **6 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 13,900.00	**R 13,900.00**
1	In-House	R 18,700.00	**R 18,700.00**
1	On-Campus (Pretoria)	R 20,800.00	**R 20,800.00**

UPCOMING SESSIONS

Start	End	Method	Venue
02 Dec 2026	04 Dec 2026	On-Campus	Shenzhen, China
02 Dec 2026	04 Dec 2026	On-Campus	Cape Town, South Africa
08 Dec 2026	10 Dec 2026	On-Campus	Maseru, Lesotho
08 Dec 2026	10 Dec 2026	On-Campus	Kigali, Rwanda
08 Dec 2026	10 Dec 2026	On-Campus	Accra, Ghana
08 Dec 2026	10 Dec 2026	On-Campus	Cape Town, South Africa
08 Dec 2026	10 Dec 2026	On-Campus	Abu Dhabi, UAE
08 Dec 2026	10 Dec 2026	On-Campus	Victoria Falls, Zimbabwe

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-0541) 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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