



PROCESS AND CHEMICAL ENGINEERING

Fundamentals of Chemical Engineering

5 day course

Classroom, online or in-house

Course overview

This course gives the chemical engineering foundation to people who work on process plant without the degree, and to graduates who need the principles connected to real equipment. Delegates work through units, material balances and energy balances, then fluid flow, heat transfer and mass transfer as the three transport processes everything else is built from. Thermodynamics is covered to the depth needed for phase behaviour and energy accounting. Reaction engineering and separation principles follow, each tied to the equipment that performs them. The course is taught throughout on plant examples rather than abstractions, and closes on reading a process flow diagram as an engineer does.

What you will learn

- Work confidently with units, conversions and dimensional consistency
- Construct material and energy balances
- Apply fluid flow principles to real pipework and equipment
- Apply heat transfer to exchangers and fired equipment
- Explain mass transfer and its role in separation
- Use thermodynamics for phase behaviour and energy accounting
- Read a process flow diagram as an engineer reads it

Who should attend

- Operators and technicians on process plant
- Engineers from other disciplines working in process industries
- Graduate engineers needing principles tied to equipment
- Technical sales and support staff
- Maintenance staff wanting to understand the process

Course outline

- 01 Units, conversions and dimensional consistency
- 02 Material balances
- 03 Energy balances
- 04 Fluid flow in real systems
- 05 Heat transfer and exchangers
- 06 Mass transfer and separation
- 07 Thermodynamics and phase behaviour
- 08 Reaction engineering and reading a flow diagram

Upcoming dates

Dates	Venue	Format	Fee per delegate
21 to 25 September 2026	Cape Town, South Africa	Classroom	R19,950
21 to 25 December 2026	Kampala, Uganda	Classroom	USD 1,325
25 to 29 January 2027	Pretoria, South Africa	Classroom	R19,950
15 to 19 February 2027	Durban, South Africa	Classroom	R19,950



Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 1,325** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afri-science.co.za, or WhatsApp us on **+27 63 479 1136**.

AfriScience Group | +27 61 536 6531 | info@afri-science.co.za | Pretoria, Gauteng, South Africa