

# Process Plant Design & Simulation

## COURSE OVERVIEW

This course introduces process plant design and simulation principles for chemical engineers. It covers material and energy balances, steady-state modelling with software such as Aspen HYSYS or CHEMCAD, economic analysis, and process optimization for safety, efficiency, and sustainability. Participants will learn to create process flowsheets (PFDs), develop piping and instrumentation diagrams (P&IDs), and size equipment like reactors, heat exchangers, and separators. Practical exercises will focus on troubleshooting, performance evaluation, and integrating control systems for industrial-scale operations.

## WHO SHOULD ATTEND?

This course is designed for process engineers, chemical engineers, design engineers, project engineers, plant operations professionals, and technical managers involved in process plant development. It is also suitable for individuals responsible for process design, simulation, optimization, or troubleshooting activities in industrial facilities.

## COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Develop and interpret process flow diagrams (PFDs) and piping and instrumentation diagrams (P&IDs).
- Perform material and energy balances for process design and optimization.
- Use process simulation software to model unit operations and entire plant systems.
- Specify and evaluate key process equipment such as reactors, distillation columns, pumps, and heat exchangers.
- Integrate safety, environmental, and operability considerations into plant design.
- Conduct process optimization, sensitivity analysis, and troubleshooting using simulation models.

## KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- Process design principles and workflow for new and existing plants.
- Material and energy balance fundamentals for system analysis.
- Unit operation modelling and equipment design considerations.
- Use of simulation tools for process design, optimization, and troubleshooting.
- Layout development and the role of PFDs and P&IDs in engineering design.
- Process safety, HAZOP considerations, and regulatory compliance.
- Economic evaluation methods for process plant projects.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded