

Course Outline

PROCESS DESIGN ENGINEERING

Introduction to Process Engineering

- Introduction
- Overview of an Engineering Organization
- Role of a Process Engineer
- Project Documentation

Basic Engineering Package:

- Overview of Basic Engineering Package.
- Introduction to the contents of Basic Engineering Package (BEP)
- Basic design requirements based on the types of plants / projects.
- Process Block Diagram
- Introduction to PFD, P&ID and PDS, Equipment list, line list
- Development of PFD, PFD specification,
- Development of P&ID,
- Introduction to Piping and Instrumentation Diagrams (P&ID) for various Oil & Gas systems
- International Codes & Standards
- Instrumentation and process control
- Fundamentals of Material Balance
- Fundamentals of Energy Balance

Process Design Engineering

- Introduction to Cause and Effect diagrams (Trip – Interlock schedule) development including various levels of shutdown
- Introduction to HAZOP Review
- Special aspects of design of batch and continuous processes
- Introduction to Hazardous area classification
- Stripper Design
- Process Safeguarding
- Gas dew-pointing by gas dehydration, J/T effect and by expander / compressor combination
- Gas sweetening and acid gas handling
- Desalting
- Wellhead desanding
- Fuel gas conditioning
- Wellhead systems
- Overview of pipeline/flowline hydraulics
- Pipelines, pig receivers/launchers

Course Outline

PROCESS DESIGN ENGINEERING

- Slug catchers
- Water injection/disposal
- Introduction to Enhanced oil Recovery (EOR)
- Special aspects of onshore/offshore process engineering

Process Equipments Detail Design:

- Heat Exchangers
- Pumps
- Heat Exchangers
- Pressure Vessel
- Separation Column
- Control Valve,
- Reactor
- Hydraulic calculations
- Vacuum systems

Process Equipments

- Selection, sizing and specifications of various process equipment such as pumps,
- compressors, distillation columns, heat exchangers and multiphase separators
- Sizing of control valves, restriction orifice plates, pressure relief devices
- Line sizing for various services
- Basics of pipe selection and of mechanical design of equipment
- Sizing of various utilities and selection
- Equipment Sizing
- Selection, sizing and specifications of various process equipment involved in batch
- processes
- Determination of capacity of batch processes

Process Simulation:

- Butane, LPC Column simulation
- Introduction to process simulations
- Light Naphtha, CO₂ Absorber

Apply safety guidelines to a process or chemical plant