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COURSE BROCHURE

Basics of Process and Mechanical Technology Training Course

7 – 11 November 2027
Doha

Basics of Process and Mechanical Technology Training Course

Ref: 564_20827 **Date:** 7 – 11 November 2027 **Location:** Doha **Fees:** 6500 GBP

Basics of Process and Mechanical Technology is a 1-week training course for new graduate engineers, operators, technicians and support staff in process plants, ending with an equipment familiarisation logbook for one unit. Many plants are onboarding young staff faster than experienced colleagues can coach them, and early equipment mistakes cost uptime and safety margins. Jupiter Prime Training delivers this course for newcomers to refineries, chemical and utility plants.

Why Basics of Process and Mechanical Technology Matter Now

Two shifts make a structured start in plant equipment more important. Experienced operators and craftsmen are retiring, so knowledge that once passed informally on night shifts now has to be taught on purpose. Automation also means newcomers see equipment on screens first. A newcomer who can link a pressure reading to a valve position, a pump curve and a vessel level raises fewer false alarms and spots real faults earlier. Plants that skip this foundation see more seal failures, wrong line-ups and avoidable trips.

Who Gains Most from Basics of Process and Mechanical Technology

- Graduate engineers starting rotations in operations, maintenance or projects
- Operators who walk field rounds and line up pumps, valves and vessels
- Technicians who maintain rotating machines, valves and piping
- Support staff in planning, warehouse and procurement who handle equipment spares
- Safety and laboratory staff who must recognise equipment on site

A new-starter intake gains most when graduates, operators and technicians from the same plant attend together and build a shared picture of one unit's equipment.

Basics of Process and Mechanical Technology Capabilities

Participants leave able to name, locate and explain each item of equipment on a process unit.

- Identify pumps, compressors, valves, vessels and exchangers on a unit drawing — field rounds and handovers
- Apply pressure, temperature and flow basics to field gauge readings — reporting abnormal conditions
- Test a pump start-up and shutdown sequence against its procedure — safe line-ups with shift leaders
- Assess simple signs of wear such as noise, vibration, leaks and heat — maintenance requests
- Specify the right spare or consumable for a common equipment item — warehouse and planning requests
- Communicate equipment status clearly at shift change — handover quality with supervisors

Key Basics of Process and Mechanical Technology Terms

- Centrifugal pump — a machine that uses a spinning impeller to raise liquid pressure and move it through a system.
- Net positive suction head — the pressure margin at a pump inlet that prevents cavitation.
- Control valve — a valve moved by an actuator to regulate flow, pressure or level in response to a controller signal.
- Pressure vessel — a closed drum, separator or column holding fluids above atmospheric pressure.
- Mechanical seal — the sealing device on a rotating shaft that stops process fluid leaking from a pump or compressor.
- Preventive maintenance — planned inspection and servicing carried out at set intervals to avoid equipment failure.

Basics of Process and Mechanical Technology Day by Day

Day 1: The Process Unit and Its Equipment

- Plant Layout, Units and Battery Limits — Finding Equipment on Site
- Pressure, Temperature, Level and Flow Basics — Reading Field Gauges
- Process Flow and Equipment Tag Numbering — Locating Items Quickly
- Equipment Families in Refining and Water Treatment — Typical Roles
- Permit to Work and Isolation Principles — Safe Access to Equipment

Day 2: Pumps and Compressors

- Centrifugal Pump Parts and Pump Curves — Normal Operating Range
- Cavitation, Suction Head and Priming — Pump Start-Up Checks
- Positive Displacement Pumps and Relief Protection — Metering Duties
- Reciprocating and Centrifugal Compressors — Surge and Load Basics
- Lubrication, Seals and Couplings — Daily Round Observations

Day 3: Valves, Piping and Vessels

- Gate, Globe, Ball and Butterfly Valves — Isolation Versus Throttling
- Control Valves and Actuators — Response to Controller Signals
- Piping Materials, Flanges and Gaskets — Leak Points to Watch
- Drums, Separators and Storage Tanks — Level and Pressure Control
- Relief Valves and Bursting Discs — Overpressure Protection Basics

Day 4: Heat Transfer Equipment and Reliability Basics

- Shell and Tube and Plate Exchangers — Hot and Cold Stream Paths
- Furnaces, Boilers and Cooling Towers — Utility Equipment Roles
- Failure Signs of Noise, Vibration, Heat and Leaks — Reporting Triggers
- Preventive and Condition-Based Maintenance — Work Request Choices
- Spare Parts and Consumables for Common Equipment — Stock Requests

Day 5: Practising the Equipment Familiarisation Logbook

- Unit Equipment List Compilation — Tags, Duties and Locations
- Pump and Valve Line-Up Walk-Through — Start-Up and Shutdown Order
- Field Round Checklist for the Unit — Normal Readings and Limits
- Shift Handover Notes on Equipment Status — Clear Reporting
- Equipment Familiarisation Logbook — Equipment List, Checklist and Handover Notes

Applying Basics of Process and Mechanical Technology After the Course

- Walk one unit with a senior operator, compile its equipment list with tags, duties and normal readings, and have the list checked by the shift supervisor.
- Prepare a field round checklist for the unit's main pumps and vessels, then use it on three consecutive rounds and record any readings outside normal limits.

Basics of Process and Mechanical Technology Questions FAQ

What are the basics of process and mechanical technology, and why do they matter now?

The basics of process and mechanical technology are the working knowledge of pumps, compressors, valves, piping, vessels and exchangers and the pressure, temperature and flow they control. They matter now because plants onboard new staff faster than experienced colleagues can coach them.

Which roles gain most from basics of process and mechanical technology training?

New graduate engineers, operators, technicians and support staff in process plants gain most. They walk units, maintain equipment or order spares.

How do the basics of process and mechanical technology differ from an advanced equipment engineering course?

They build recognition and safe operating habits rather than design or integrity assessment. Participants learn what equipment does and how to report its condition, not how to calculate stresses or set inspection intervals.

What do you bring back from basics of process and mechanical technology training?

You bring back an equipment familiarisation logbook for one unit. It lists equipment with tags and duties, a field round checklist and handover notes on equipment status.

Basics of Process and Mechanical Technology: The Way Forward

The equipment familiarisation logbook first informs how a newcomer runs field rounds and reports equipment status on their unit. Shift supervisors and mentors use it to check readiness for independent rounds. After the first month, revisit the normal readings recorded in it, because seasonal and load changes will show which limits need adjusting.