

**COURSE OVERVIEW**

This course provides the participants with a working knowledge of the design and operation of the crude oil processing and handling units. It covers the theoretical and applied concepts of design and operation of the crude oil flow lines and gathering systems, manifolds, separation, de-watering, emulsion breaking, production testing of oil wells and oil gas measurements. It also covers crude oil transportation and storage, evaporation losses and vapour recovery systems and corrosion problems in production operations.

The course includes work example sessions and is intended for petroleum and production engineers with some experience.

**WHO SHOULD ATTEND**

The course is intended for Petroleum and Production Engineers, and technical staff with some experience.

**COURSE CONTENT****Introduction:**

- An overview of the production system.
- The reservoir, the well-bore, and vertical flow.
- Constraints, and the interaction.

**Physical properties of hydrocarbons:**

- The nature, compositions, and properties of hydrocarbons.
- The phase behavior of hydrocarbons.
- Types of reservoirs, vapor/liquid behavior in the well bore.
- Gas solubility in crude oil, gas/oil (gas/liquid) ratio.
- The mole concept, ideal and non-ideal gases and compressibility factor. Crude oil, and natural gas specifications.

**Well testing:**

- Productivity.
- Built-up and production testing.

**Field processing of gas/liquid mixtures:**

- Function and types of separators.
- Sizing of two and three phase separators.
- Special problems in gas/liquid separation (foam formation and breaking, wax removal, sand production and removal).

- Flash calculations, the concept of convergence pressure and equilibrium vaporization ratios.
- Factors affecting separation.
- Optimization of operating pressure and number of stages.
- Use of stabilizer in gas /liquid separation.
- Evaporation losses and vapor recovery systems.
- Emulsion formation and field treatment of water-oil emulsion.
- Desalting operations and water disposal.
- Crude oil sweetening.

**Fluid flow in pipes:**

- Multiphase flow in pipes and chokes.
- Pipeline design for crude oil transportation.
- Single line, loop lines and complex systems.
- Pumping stations and sizing of pumps and prime movers.

**Corrosion problems in production operations:**

- Theory of corrosion.
- Nature of metals, factors affecting corrosion.
- Forms of corrosions and their control and monitoring.

**THE LECTURER  
ONE OF PETRO-TEC LECTURERS**

## YEARS 2018 – 2019

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1. Basic Safety Course
2. HSE Management
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13. HSE Induction (Level 1)
14. HSE Induction (Level 2)
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38. Gas Testing
39. Breathing Apparatus Service & Maintenance
40. Self Contained Breathing Apparatus (Scba)
41. Emergence Response Course
42. Fire Fighting Course
43. Industrial First Aid
44. Drilling HSE Workshop