Petroleum Engineering For Non-Engineers Training

Course Price

£2750

Course Description

Course Objectives

The aim of this short course training is to provide a basic knowledge of petroleum engineering operations.

At the end of this course participants will be able to:

• Learn various petroleum engineering functions.
• Understand various petroleum engineering principles, drilling & completion, reservoir, production, facilities engineering
• Get basic knowledge of the physical properties of hydrocarbons.
• Understand hydrocarbon flow in the reservoir.
• Learn about drive mechanisms and resulting hydrocarbon recovery.
• Understand the basics of how to estimate oil/gas in place with volumetric calculations.
• Obtain a basic understanding of economic evaluation through the use of cash-flow.
• Get basic understanding of downstream petroleum engineering, transportation, refining, petrochemicals
• Have an understanding of petroleum engineering economics
• Issues on HSSE

Who Should Attend

This short course is intended for all those involved in Petroleum Engineering Operations but do not have formal training as engineers, like geoscientists, geotechs, engineering techs, landmen, attorneys, financial and accounting managers, support professionals, and other non-technical personnel who require a basic understanding of petroleum engineering.

Course Content

• Introduction and quick review of geology behind the process.
• “Oil Well” video illustrating basic drilling and completion, as well as a blow-out
• Overview of onshore / offshore drilling rigs: Design considerations, pros and cons of different systems.
• Directional Drilling Tools and Techniques: Identification of conditions requiring a directional well,
horizontal well productivity, and pros and cons.

- Well Completions: Completion methods – open-hole, perforating, wire-wrap; discussion of oil well production equipment – casing, tubing, review of cementing practices and procedures.
- Well Log Analysis: SP and GR Logs; shaliness; porosity measurement – equation calculation; density logs/sonic logs; determining saturation.
- Reservoir engineering, Reservoir Simulation
- Reservoir Stimulation: Acidizing; Hydraulic Fracturing
- Reservoir Drive Mechanisms: Dissolved gas, Gas cap, Water and combo drives;
- Improved Recovery Techniques: Waterflooding; Artificial lift options – gas lift, sucker rod pumps and electrical submersible pumps.
- Handling Sub-Surface Fluids: Removing water; separating liquid and gas; storing the crude oil.
- Downstream petroleum industry, transportation, refining, petrochemicals
- Petroleum economics
- Health, Safety, Security and Environment

SPECIAL FEATURES:
- Current case studies and examples will be given.
- Class exercises reinforce the lectures
- Material is illustrated with field examples

Day 1

1. Introduction to the Oil & Gas Industry

- Energy Types, Statistics
- Energy supply, demand and pricing
- Ownership and exploitation of reserves

QUIZ: pre – assessment of knowledge level on Oil & Gas Industry
VIDEO: Oil & Gas Overview

2. Upstream Operations

- Exploring for Oil & Gas
- Introduction to Geology/Earth Structure/Plate Tectonics
- Rock types/Rock Structures/Petroleum Origins
- Rock and Fluid Properties
- Petroleum Accumulations/ Reservoir Performance
- Seismic Exploration

VIDEO: Geophysical exploration

3. Hydrocarbon Quantity Estimates

- Resources definitions and uncertainty
- Economic evaluation

EXAMPLE: Resource estimation

4. Legal Contracts for Oil & Gas Rights
• Key terms
• The players
• Contract types
• NOCs vs IOCs

Day 2
1. Drilling & Completion

• Drilling Process
• Drilling Rigs and Equipment
• Logging & Evaluation
• Well Completion
• Field Appraisals

VIDEO: Drilling & Completion

2. Reservoir Engineering

• Properties of reservoir rocks fluid (oil, water, and gas)
• Parameters that impact well/reservoir performance
• Reservoir drive mechanisms for both oil and gas reservoirs
• Hydrocarbon well testing
• Field development plans

EXAMPLE: Reservoir Fluid Properties

3. Production Engineering

• Role of production engineers
• Components of production system
• Single – two phase flows
• Formation damage issues & mitigation
• Artificial Lift Methods

VIDEO: Production System

4. Surface facilities

• Pumps & Valves
• Measurement Controls
• Manifolds/Separator Types
• Oil & Gas Measurement/ Metering
• Oil & Gas Treatment & Storage

VIDEO: Surface production facilities

Day 3
1. Downstream Processes
• Oil Transportation/Pipeline Operations & Pigging
• Natural Gas transportation and use
• Liquefied Natural Gas make and use

VIDEO: The role and future of LNG

2. Petrochemicals

• Refining
• Petrochemical Industry
• Corrosion & Scale Protection

VIDEO: Overview of downstream petroleum

3. Economics

• Marketing/Petroleum Economics
• The Role of Technology

EXAMPLE: Asset economic development evaluation


• Issues and awareness for Oil & Gas Industry
• Onshore vs Offshore
• HSSE indicators, monitoring and improving
• Regulations and compliance

VIDEO: HSSE in Oil & Gas

QUIZ: post – assessment of knowledge level on Oil & Gas Industry

CPD Unit

Continuing Professional Development

21 HOURS CPD