This course can be adapted to virtual classroom mode

Exploration & Production Overview

5 days **DCOUVEP-EN-A**

Overview

LEVEL

Awareness

PURPOSE

This training aims to give a complete overview of the main activities of Exploration & Production through its global process, by going through the key stages of the valorization of a hydrocarbon field. You will discover the fundamentals and vocabulary of Exploration & Production techniques: geosciences, reservoir engineering (enhanced recovery, unconventional resources, CO_2 capture and storage), drilling, completion, production, projects, decision-making process, economic aspects and patrimonial contracts.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:

explain the various phases of Oil & Gas development projects,

identify the contribution of all experts and technologies involved through a field development project,

understand the E&P value chain from prospect to market and associated contractual framework,

describe techniques involved in field development in order to efficiently interact with technical teams.

WAYS AND MEANS

Highly interactive course delivered by experts of the E&P industry.

Numerous examples and feedbacks from the industry. Numerous videos and animations.

LEARNING ASSESSMENT

Table game in small groups.

PREREQUISITES

Basic technical knowledge in the Oil & Gas industry.

MORE INFO

Other training duration availability on request.

Agenda

INTRODUCTION TO THE OIL & GAS INDUSTRY — 0.25 d

Introduction to the energy business: energy resources; energy demand and supply.
Scope of the Oil & Gas industry:
Context: producer and consumer countries; national/ independent/ international oil companies; services companies; international organizations.
Risks related to the Oil & Gas industry.

GEOSCIENCES & RESERVOIR ENGINEERING — 1.25 d

Introduction to petroleum geology:
Geodynamics of the earth. Sedimentary basins. Structural deformations (folds & faults).

Clastic and carbonate depositional environments and reservoirs.
Elements and processes of the petroleum system (source, reservoir, seal, traps).
Subsurface models, inputs data and concepts:
Seismic data gathering, processing and interpretation.
Well data acquisition and analysis.
Formation evaluation and sampling (logs and cores).
Reservoir characterization and modeling:
Data integration; introduction to reservoir modeling.
Management of subsurface uncertainties.
Volumetrics (in-place hydrocarbon estimation).
Subsurface Development Options: reservoir engineering:
Field development planning.
Drainage mechanisms: introduction to EOR and storage.
Different types of reservoir effluents and their behavior.
Unconventional resources:
Introduction to unconventional developments.
Non-conventional resources and their extraction techniques.
Environmental aspects.

FIELD OPERATIONS & DEVELOPMENT

2.25 d

Drilling:
Main functions of drilling rigs: lifting, rotating, pumping, power and safety.
Types of drilling rigs.
Well architecture.
Well construction.
Drilling equipment: bits, drilling string, drilling fluids...
Drilling techniques: casing, cementing, directional drilling, well testing, instrumentation.
Well control - BOPs (safety devices: wellheads in drilling).
Sampling: measurements during drilling (LWD), coring, mud-logging and wireline, fluid sampling.
Specificities of offshore equipment.
Well completion:
Reservoir/wellbore interface; basics of well performance; stimulation; artificial lift techniques.
Well equipment and well intervention.
Field architecture:
Surface development options; study of various existing fields.
Case of offshore developments.
Surface facilities:
Well effluent gathering network.
Oil, gas and water processing.
Metering, storage and export.
Oil & Gas transport through pipelines and tankers.
Offshore installations: from shallow water to deep offshore technology.
HSE in field development:
Main hazards in hydrocarbon exploration & production operations.
Overview of safety engineering and environmental impact assessment studies throughout Oil & Gas project life cycle.

OIL & GAS FIELD DEVELOPMENT PROJECTS: DECISION MAKING PROCESS, ECONOMICS & LEGAL FRAMEWORK

1 d

Legal framework in E&P: oil contracts and principle of the oil rent sharing.
Project profitability evaluation:
Oil & Gas project economics and financial performance indicators.
Reserve evaluation. Impact of subsurface uncertainty on project economics.
Field development process:
Decision making process: preliminary studies. Conceptual studies. Pre-project studies.
Execution phases: basic engineering or FEED. Detailed engineering. Procurement. Construction. Commissioning.
Technical service contracts.
Project control:
Scheduling and planning control.
Cost estimation and control.
Decommissioning.

SERIOUS GAME: OIL FIELD DEVELOPMENT CYCLE

0.25 d