Development Geology

Course Price

£3050

Course Description

This course will teach the participants how to develop oil and gas reservoirs and fields in order to recover the maximum volume of oil and gas reserves with a minimum investment of time and capital resources. Understanding of subsurface is the key for a successful development of oil and gas fields, and the development geologist plays an important role in the process. The course is designed to equip the development team with tools and skills to pull together an efficient field development plan (FDP).

During the course, the oil and gas project lifecycle, reservoir characterization of carbonate and siliciclastic reservoirs, building subsurface models, volumetric estimation and uncertainty analysis are discussed in preparation of a development plan. Decision making process, economical evaluation and project risks are discussed to provide a full picture of the field development.

Importance of modifying development plans as a result of new data is emphasized. In addition, techniques for field redevelopment and rejuvenation of the fields which are in decline are also discussed.

When applicable dedicated exercises are included to ensure that participants understand the concepts discussed.

Course Objectives

- Understand the fundamentals and applications of Development Geology
- Understand the oil and gas projects lifecycle
- Have a better knowledge on reservoir rock and fluid properties
- Characterize carbonate, clastic and fractured reservoirs
- Determine the most important characteristics that impacts the field development
- Gain knowledge on subsurface models (Static and Dynamic)
- Understand the use of geostatistics and seismic attributes in development geology
- Learn how to calculate the original hydrocarbon in place and assess uncertainties
- Learn how to compile a development plan
- Use economical evaluation techniques and run sensitivities
- Gain knowledge of decision making process in the field development
- Understand basics of project planning and risk assessment
Who Should Attend

Development Geologists, Development Geophysicists, Reservoir Engineers, Drilling Engineers Petrophysicists; Data Managers, development managers and any other persons involved in the appraisal and development of oil & gas reservoirs.

Course Content

Day 1

Development projects and subsurface data

- Life cycle of the oil & gas fields
- Oil and gas development projects
- Subsurface data and data gaps
- Reservoir rock and fluid properties
- Characteristics that impact field development

Day 2

Reservoir Characterization

- Carbonate reservoir geology
- Siliciclastic reservoir geology
- Naturally fractured reservoirs
- Predicting rock properties
- Basic elements of a reservoir characterization study

Day 3

Subsurface Models

- Geostatistics in reservoir characterization
- Seismic attributes for development geology
- Use of conceptual models and data from analogue fields
- Reservoir geological model (static model)
- Dynamic grid design and upscaling
- Reservoir dynamic model
- Model validation and ranking

Day 4

Volumetric Reserve Estimation and Uncertainty Analysis

- Elements that influence the volumetric reserves
- Methods of volumetric estimation
• Deterministic and probabilistic reserves estimation
• Uncertainty analysis
• Reserves classification and reporting
• Development drilling: optimizing hydrocarbon recovery

Day 5

Subsurface Development Options

• Field development planning (FDP)
• Use of analogue fields
• Project economics and sensitivities
• Decision making process in the field development
• Project planning and risk management
• Secondary and tertiary field development

CPD Unit

Continuing Professional Development

35 HOURS CPD