

Course No. 1858

Advanced Petroleum Engineering & Reservoir Management Training Course

UPSTREAM OPERATIONS, EXPLORATION, DRILLING, RESERVOIR &
PRODUCTION
OIL & GAS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

This advanced training course provides a comprehensive and integrated approach to petroleum engineering and reservoir management, focusing on the technical factors that influence the exploration, development, production, and lifecycle management of oil and gas fields. The course connects reservoir characteristics, fluid behavior, well performance, production operations, and recovery technologies to support sound engineering decisions and maximize the technical and economic value of petroleum assets.

Participants will examine advanced approaches to reservoir characterization, rock and fluid evaluation, pressure analysis, production performance, reservoir drive mechanisms, reserves estimation, and recovery factor assessment. The course emphasizes the effective use of well and reservoir data to evaluate performance, forecast production, identify operational constraints, and determine opportunities for production improvement and resource optimization.

Reservoir management is addressed as an integrated discipline involving reservoir engineering, production engineering, well engineering, geology, and field operations. Participants will learn how to develop reservoir management strategies, conduct performance surveillance, optimize production and injection, manage reservoir pressure, address heterogeneity and early water or gas breakthrough, and maximize ultimate recovery.

The course also covers primary, secondary, and enhanced recovery methods, production optimization, artificial lift, well performance management, forecasting, and intervention opportunities. Through practical exercises and case studies, participants will develop an advanced framework for making field development and reservoir management decisions throughout the lifecycle of oil and gas assets.

Objectives

- By the end of the course, participants will be able to:
- Analyze advanced petroleum engineering principles and their application to field development.
- Evaluate reservoir rock and fluid properties and their impact on reservoir and well performance.
- Analyze pressure behavior, reservoir drive mechanisms, and field performance evolution.
- Apply reserves and recovery factor concepts to evaluate future production potential.

- Analyze production and pressure data to identify performance trends and optimization opportunities.
- Evaluate reservoir development, production, and injection strategies.
- Apply reservoir surveillance and well performance management principles.
- Assess primary, secondary, and enhanced recovery technologies and their appropriate applications.
- Analyze the impact of reservoir heterogeneity, water breakthrough, and gas breakthrough on production.
- Develop integrated strategies for production optimization and reservoir pressure management.
- Evaluate artificial lift and well intervention opportunities to improve production performance.
- Develop integrated reservoir management strategies to maximize recovery and asset value.

Who Should Attend

This course is designed for reservoir engineers, petroleum engineers, production engineers, well engineers, and professionals involved in field development, reservoir management, production optimization, and petroleum asset performance. It is also relevant to geoscientists and technical specialists involved in reservoir characterization, surveillance, and well performance analysis.

It is particularly suitable for professionals responsible for reservoir evaluation, reserves estimation, production forecasting, pressure and production analysis, field development planning, injection management, production optimization, and the evaluation of well intervention opportunities.

The course is also appropriate for asset and reservoir managers, technical managers, production supervisors, field development specialists, multidisciplinary teams, and decision-makers responsible for maximizing field production, managing technical risks, improving recovery, and enhancing the economic performance of oil and gas assets.

Learning Outcomes

- Upon completion of this course, participants will be able to:
- Explain advanced concepts in petroleum engineering and reservoir management.
- Evaluate reservoir rock and fluid properties and their influence on reservoir behavior and production.

- Analyze pressure and production performance and identify reservoir drive mechanisms.
- Evaluate well productivity and reservoir performance using operational data.
- Assess remaining reserves and opportunities for additional recovery.
- Analyze production, pressure, water, and gas trends to identify performance problems.
- Evaluate reservoir development, production, and injection strategies.
- Develop effective reservoir surveillance and continuous performance monitoring programs.
- Evaluate recovery technologies according to reservoir characteristics and operating conditions.
- Identify opportunities for production optimization, artificial lift improvement, and well intervention.
- Determine reservoir and operational constraints affecting production.
- Develop strategies for water and gas management and improved reservoir sweep.
- Evaluate technical risks and uncertainties associated with field development decisions.
- Support decisions regarding well placement, production allocation, and injection programs.
- Develop strategies to improve recovery factor and extend field productive life.
- Prepare an integrated reservoir management strategy for the lifecycle of an oil and gas asset.

Course Outline

DAY 01

Advanced Petroleum Engineering and Reservoir Characterization

- Role of petroleum engineering throughout the oil and gas field lifecycle.
- Reservoir properties and their influence on production performance.
- Porosity, permeability, saturation, and reservoir heterogeneity.
- Reservoir fluid properties and phase behavior.
- Pressure, temperature, and fluid distribution within reservoirs.
- Advanced reservoir characterization and multidisciplinary data integration.
- Reserves estimation and recovery factor concepts.

PRACTICAL APPLICATION

Analyze a representative reservoir dataset and evaluate its characteristics and production potential.

DAY 02

Reservoir and Well Performance Analysis

- Reservoir pressure behavior throughout field production.
- Reservoir drive mechanisms and their impact on production.
- Material balance and reservoir performance evaluation.
- Production decline analysis and performance forecasting.
- Well productivity and the relationship between reservoir pressure and production.
- Water cut and gas-oil ratio analysis.
- Reservoir surveillance and interpretation of production and pressure data.
- Remaining hydrocarbon potential and recovery opportunities.

PRACTICAL APPLICATION

Analyze production and pressure datasets to evaluate reservoir and well performance and identify optimization opportunities.

DAY 03

Reservoir Management and Field Development

- Principles of integrated reservoir management.
- Field development strategies and well placement considerations.
- Reservoir pressure management and injection strategies.
- Water and gas injection and sweep efficiency optimization.
- Reservoir heterogeneity, channeling, and early water or gas breakthrough.
- Production and injection balancing.
- Integration of reservoir, production, well, and geological engineering.

PRACTICAL APPLICATION

Develop an integrated reservoir management strategy covering production, injection, surveillance, and performance optimization.

DAY 04

Production Optimization and Advanced Recovery

- Primary, secondary, and enhanced oil recovery mechanisms.
- Evaluation and screening of Enhanced Oil Recovery technologies.
- Well performance optimization and artificial lift applications.
- Identification of production bottlenecks and subsurface constraints.
- Water, gas, scale, and fluid-related production challenges.
- Evaluation of well intervention and workover opportunities.
- Production rate and energy efficiency optimization.

PRACTICAL APPLICATION

Analyze an underperforming well and develop an integrated strategy for improving production and recovery.

DAY 05

Advanced Reservoir Management and Decision-Making

- Long-term reservoir and field performance forecasting.
- Managing uncertainty and technical risks in field development decisions.
- Production and injection scenario evaluation.
- Recovery factor optimization and remaining resource management.
- Reservoir and well performance indicators.
- Technical and economic evaluation of mature asset optimization opportunities.
- Reservoir lifecycle management and asset value maximization.
- Integrated decision-making using reservoir, production, and well data.

FINAL WORKSHOP

Develop a comprehensive petroleum engineering and reservoir management plan covering reservoir characterization, performance analysis, reserves assessment, field development, production and injection strategies, well optimization, recovery technologies, risk management, and recovery factor improvement throughout the field lifecycle.



Register or Request More Information

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