

APPLIED RESERVOIR ENGINEERING

RSE024

COURSE OVERVIEW

The course aims to provide a better knowledge on the different aspects applied in Reservoir Engineering to improve the ultimate hydrocarbon recovery. The course addresses main Reservoir Engineering topics starting from the primary recovery and up to enhanced oil recovery. Both Conventional Reservoir Engineering and Modeling approaches are included. The course will extend to include special topics such as coning control with smart horizontal wells and enhanced oil recovery modeling.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Gain a comprehensive understanding of fundamental concepts in Reservoir Engineering.
- Learn techniques for characterizing reservoir fluids and rock properties.
- Understand different drive mechanisms affecting hydrocarbon recovery.
- Master the material balance equation and its applications.
- Familiarize with aquifer models and their impact on reservoir behavior.
- Develop proficiency in conducting and interpreting well tests.
- Learn about reservoir system models, including skin and wellbore storage effects.
- Gain knowledge in pressure build-up analysis and well test design.
- Acquire a thorough understanding of waterflooding principles, design, and optimization.
- Explore advanced topics such as LoSal and BrightWater techniques for waterflooding.
- Understand saturation functions, J function, and mobility in reservoirs.
- Study the applications of capillary pressure and relative permeability.
- Learn about integrated reservoir studies and their objectives and outcomes.
- Develop familiarity with numerical reservoir simulations and simulation model elements.
- Explore the fundamentals of heavy oil development, including appraisal and characterization.
- Gain insights into various enhanced oil recovery (EOR) methods: thermal, chemical, miscible, and microbial.
- Understand the basics of petroleum economics, including components of PSC and economic indicators.
- Gain knowledge of economic modeling in the context of reservoir engineering.

WHO SHOULD ATTEND

This course is designed for junior and experience reservoir and petroleum engineers in addition to other geoscientists who seeks to have more knowledge on Reservoir Engineering aspects.

COURSE DURATION

5 Working Days

COURSE OUTLINES

- Pre course evaluation
- Fundamentals
- Reservoir Fluid Characterization
- Rock Properties
- Drive Mechanisms
- Material Balance Equation
 - Objectives
 - Applications
 - Limitations
 - Aquifer Models
- Well Test Fundamentals
 - Data Gathering
 - Types of Well Tests
 - Reservoir System Models
 - Skin and WBS
 - Type Curve Approach
 - Superposition
 - Pressure Build-Up (PBU)
 - Well Test Design
- Waterflooding
 - Basics
 - Design
 - Optimization
 - Advanced topics: LoSal and BrightWater
- Saturation Functions
 - J Function
 - Mobility
 - Applications of Capillary Pressure
 - Steady and Unsteady Relative Permeability
- Integrated Reservoir Studies
 - Objectives and Process

- Outcomes
- Components
- Numerical Reservoir Simulations
 - Use and Misuse
 - Analytical vs. Numerical Techniques
 - Elements of Simulation Model
 - Simulators' Examples
- Heavy Oil Development
 - Fundamentals
 - Appraisal and Development
 - Characterization
 - Case Studies
- EOR Methods
 - Thermal
 - Chemical
 - Miscible
 - Microbial
- Petroleum Economics
 - Overview
 - PSC Components
 - Economic Indicators
 - Economic Model
- Post course evaluation

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