

# BASICS OF RESERVOIR ENGINEERING

## RSE001

### COURSE OVERVIEW

Basic Reservoir Engineering is a course designed to help the participants develop a more complete understanding of the characteristics of oil and gas reservoirs, from fluid and rock characteristics through reservoir definition, delineation, classification, development, and production. Data collection, integration, and application directed toward maximizing recovery and Net Present Value are stressed. Basic reservoir engineering equations are introduced with emphasis directed to parameter significance and an understanding of the results.

### COURSE OBJECTIVES

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

- Understand the basic concepts of reservoir engineering: This includes understanding the properties of reservoir fluids and rocks, the fundamentals of oil production and recovery, and the different types of reservoir drive mechanisms.
- Apply reservoir engineering principles to solve problems: This involves being able to use reservoir engineering equations and models to solve real-world problems.
- Analyze and evaluate reservoir engineering data: This involves being able to collect, organize, and interpret data from reservoir wells and other sources.
- Communicate effectively with other professionals in the oil and gas industry: This involves being able to communicate technical information in a clear and concise way.
- Develop a strong foundation in the fundamentals of reservoir engineering: This involves having a solid understanding of the basic principles of reservoir engineering

### WHO SHOULD ATTEND

Geologists, geophysicists, engineers, engineering trainees, technical managers, technical assistants, technicians, chemists, physicists, technical supervisors, service company personnel, sales representatives, data processing personnel, and support staff working with reservoir engineers and wanting to understand the process of reservoir definition, development, and production, or engineers newly placed in a reservoir engineering position that want a first reservoir engineering course at the Basic level.

### COURSE DURATION

5 Working Days



## COURSE OUTLINES

### Day 1

- Pre course evaluation
- Introduction to Reservoir Engineering
  - Petroleum Reservoirs
  - Reservoir Geology
  - Reservoir Structure
  - Role of Reservoir Engineers
  - Multidisciplinary Asset Team
  - Reservoir/Field Cycles
  - Hydrocarbon Types

### Day 2

- Reservoir Fluid Properties
  - Density
  - Viscosity
  - Specific Gravity
  - GOR
  - Saturation Pressure
  - Deviation Factor
  - FVF
- Phase Diagram
- Reservoir Rock Properties
  - Porosity
  - Rel. Permeability
  - Permeability
  - Capillary Pressure
  - Compressibility
- Reservoir Fluid Flow

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### Day 3

- Fundamentals of Oil Production
- Inflow Performance Relationship (IPR)
- Outflow Performance Relationship (OPR)
- Reservoir Classifications
- Drive Mechanisms

### Day 4

- Oil Recovery Principles
- Recovery Efficiency
- Waterflooding Concept
- Oil Displacement Principles
- Fractional Flow
- Buckley, Leverett & Welge
- Mobility

### Day 5

- Reserves and Resources
  - Definitions
  - STOOIP Estimation
- Reserve Definitions and Estimation
- Reservoir Monitoring
- Post course evaluation

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