



Introduction:

This course is designed for professionals who work with, or rely on, analyses provided by reservoir engineers, or who otherwise need to understand and communicate with them on a technical or commercial basis. Those who would benefit from this course include Geologists, Geophysicists, Petrophysicists, facility and operations engineers, drilling and production engineers, pipeline engineers, and economic/business analysts. The course provides an understanding of the underlying value and limitations of the analyses provided by reservoir engineers, as well as a better understanding of the required data and assumptions involved in the practice of reservoir engineering. Participants will obtain an understanding of routine reservoir engineering calculations, the data required to perform these calculations, the primary tools and techniques used by reservoir engineers, and the information gained by the application of those techniques. The limitations of the extrapolation of the results to the decision making process will also be covered. Throughout the course, the impact of the data, assumptions and technical limitations are related to the economic impact they have on reservoir management.

This course is designed to cover basics of reservoir engineering and its integration with other subsurface disciplines by discussing the basics of fluid flow in porous media, petroleum fluid properties, reservoir drive mechanisms, recovery factors, reserves estimation including volumetric, material balance and decline curve analysis. Principles of other reservoir engineering applications like well testing, is also covered. This course introduces basic reservoir engineering concepts and methods to enable cross-disciplinary exchange of ideas and experience. It provides the required input to help you understand questions crucial to the reservoir engineer: How much oil & gas is there (accumulation)? How much can be recovered (reserves)? How fast can it be recovered (rate)? The course will feature:

- Role of reservoir engineers
- Reservoir fluids phase behavior
- Fundamentals of fluid flow in porous media
- Volumetric reserve estimates
- Reservoir drive mechanisms

- Displacement concepts
- Principles of decline curve analysis
- Material balance concepts
- Principle of well testing

Who Should Attend?

Geologists, Geophysicists, Reservoir Engineers, Production Engineers, Petrophysicists, Petroleum Engineers, Drilling Engineers, Field Development Engineers, Managers, Asset Managers, Oil & Gas Engineers, Reservoir Operators, Surveillance Engineers, Technicians, Engineering Trainees, Technical Managers, Technical Assistants, Technicians, Chemists, Physicists, Technical Supervisors, Service Company Personnel responsible for improving the performance of petroleum reservoirs

Course Objectives:

By the end of this course, delegates will be able to know about:

- Single- and multi-phase fluid flow through porous media
- Fluid phase properties during hydrocarbon recovery
- Reservoir engineering concepts and terminology
- How recovery factors and reserves are being estimated and predicted
- Typical assumptions and simplifications required to predict reservoir performance

Course Outline:

- Introduction to the physics of petroleum reservoirs
- Overview of reservoir engineering
- Fundamentals of reservoir fluids phase behavior
- Fundamentals of fluid flow in porous media
- Volumetric resource estimates and reservoir drive mechanisms
- Fractional flow and displacement concepts
- Fluid properties in reservoir engineering
- Fluid types
- Phase behavior

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- Correlations
- Equations of state
- Fundamental rock properties
- Porosity
- Wettability
- Capillary pressure
- Permeability
- Relative permeability and other concepts
- Evaluation and recovery of oil and gas reserves
- Classification of reserves
- Recovery factors
- Volumetrics of oil and gas reservoirs
- Material balance calculations
- Oil-water displacement
- Mobility ratio
- Buckley-Leverett
- Displacement efficiency
- Principles of decline curve analysis
- Material balance concepts
- Principles of well testing
- Well performance
- Introduction to transient well test analysis
- Decline curve analysis