

## Reservoir Engineering – Advanced (5 days)

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### Business Context:

In the business of exploration and production of oil and gas fields, integrated petroleum engineering studies and field development plans are management tools which are used to maximise economic production of hydrocarbons. Reservoir engineers fulfil a key role in handling, analysing and interpreting subsurface and production data at all stages of field development. In this course the key tools of modern practical reservoir engineering methods are discussed, explained and exercised.

### Who should attend:

Reservoir engineers with a few years practical experience and petroleum engineers that require more than general knowledge of reservoir engineering.

### Content of the program:

- Geology and reservoir development.
- Fluid sampling, logging, well testing.
- PVT & fluid sampling, constant volume depletion, const. composition expansion, differential liberation.
- Stochastic and deterministic modelling. Reservoir flow systems.
- Capillary pressures, surface tension, wettability, Darcy's Law, pseudo relative permeability, movable oil, mobility ratio.
- Application and effect of the above reservoir properties in reservoir simulation.
- Production forecasts and decline curve analysis.
- Viscosity and viscous fingering. Determination of critical flow rates.
- Theory and practice of oil and gas well testing and pressure analysis techniques.
- Well inflow equations for stabilized flow conditions, steady and semi steady state, examples.
- Immiscible, incompressible and the Buckley Leverett 1D displacement theory, application to water flooding.
- Determination of fractional flow curves and oil recovery.
- Secondary recovery, new techniques & advances.

### Learning, methods and tools:

At the end of the course participants will be able to understand and apply reservoir engineering methods and tools. They will have the skills for petroleum reserves estimation, material balance calculations, short and long term development planning, and assessment of development uncertainties. Practical experience will be obtained in planning and evaluation of oil and gas well tests, reservoir modelling and enhanced recovery methods.