

## **Reservoir Engineering – Basic (5 days)**

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### **Business Context:**

In the E&P business, 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 fundamental concepts and a broad spectrum of modern practical reservoir engineering methods are addressed. Extensive use is made of practical and actual field problems to illustrate relevant subjects.

### **Who should attend:**

Petroleum engineering team leaders, production- and reservoir engineers, petrophysicists and geologists involved with exploration and development of oil and gas reservoirs.

### **Content of the program:**

- Geometry of oil & gas accumulations
- Reservoir rock properties
- Distribution of hydrocarbon fluids
- Hydrocarbon composition, properties and phase behaviour, gas reservoir engineering concepts.
- PVT parameters, basic laboratory experiments, reservoir fluid sampling, formation water properties.
- Pressure regimes, fluid gradients and contacts, capillary pressures, surface tension, wettability.
- Hydrocarbons-in-place estimation, uncertainties, probabilistic methods.
- Relative permeability, movable oil, mobility, drainage and imbibition.
- Viscous flow, flow conditions.
- Reservoir heterogeneity and sweep.
- Recovery drive-energy, general material balance equation, recovery factors and production forecasts.
- Radial differential fluid flow equation.
- Introduction to analysis and interpretation of pressure tests: drawdown and build-up.
- Skin: source and how to minimize it.

### **Learning, methods and tools:**

At the end of the course participants will be able to understand the physics of oil and gas fields, to apply reservoir engineering methods and to appreciate the construction and use of reservoir models. They will have acquired the skills necessary for estimation of petroleum reserves, development planning and to assess uncertainties. Practical experience will be obtained in integrated field development work by addressing pertinent problems in study teams.