Petrogenium. Academy

Upstream (Reservoir Engineering)

Basic Reservoir Engineering

Consultant / Trainer

Wim Swinkels/Thorsten Viertel

The **Petrogenium (in collaboration with EPTS) Basic Reservoir Engineering** course will strengthen participants ability to analyze and interpret subsurface and production data across the full field life cycle and understand how reservoir engineering inputs drive robust field development plans and economically optimized hydrocarbon recovery. Through exposure to fundamental concepts and modern practical methods, supported by real field-based exercises, they will gain confidence in applying reservoir engineering tools and workflows to realistic development and production problems.

Participants

This **Petrogenium.** course is designed for new reservoir engineers and petroleum engineering staff, who are familiarizing with the application of reservoir engineering methods in their daily practice.

Learning Objectives

At the end of the Basic Reservoir Engineering Course participants will understand the physics of oil and gas fields, and have an awareness of modern reservoir engineering principles and practical considerations for reservoir development and production, including the estimation of oil and gas reserves.

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Learning Objectives

Course content

- Reservoir rock properties.
- Capillary pressures, surface tension, wettability.
- Distribution of hydrocarbon fluids, pressure regimes, fluid gradients and contacts
- Hydrocarbons-in-place estimation
- The SPE PRMS system for reserves and resource classification and estimation
- Fluid properties and phase behaviour, PVT parameters, fluid sampling and laboratory procedures
- Recovery drive-energy, material balance, recovery factors and production forecasts.
- Gas reservoir engineering concepts.
- Radial flow equations and well behaviour
- Skin: source and how to minimize it.
- Design and interpretation of pressure transient well tests: drawdown and build-up.
- Production forecasting
- Relative permeability, movable oil, fluid displacement, mobility,
- Reservoir heterogeneity and sweep.
- Reservoir simulation principles
- EOR principles
- Field Development Planning

Programme

Day 1

Reservoir rock and volumes

1. Course Introduction, the Reservoir Engineering work flow, example case
2. Reservoir rock properties, permeability porosity and fluid flow
3. Permeability averaging
4. Capillary pressure and saturation height relations
5. Distribution of hydrocarbon fluids
6. Exercise: fluid gradients and contacts
7. Volumetric Oil in Place and Gas in Place calculations (STOIIP and GIIP)
8. Reserves and resources: the SPE PRMS system
9. Exercise: Hydrocarbons in place estimation

Day 2

Fluid behaviour and Material Balance

1. Oil and gas, composition and phase behaviour
2. Reservoir fluid properties of oil and gas
3. Exercise PVT correlations for oil and gas
4. Drive Mechanisms and Oil Material Balance
5. Read and discuss: material balance field case

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

Because Experience Matters

Contact Petrogenium.:

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Website:https://www.petrogenium.com/training/

Programme

Day 3

Well behaviour and well tests

1. Gas Material Balance and applications
2. Exercise volumetric gas volume estimation, p/z plot
3. Wells, inflow performance, skin, horizontal wells
4. Exercise: use of well inflow calculations
5. Exercise: gas production forecasting
6. Oil well testing, Pressure Draw Down and Build Up analysis
7. Decline Curve Analysis and Production forecasting
8. Exercise: oil production forecasting

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Day 4

Displacement, sweep and reservoir modelling

1. Relative permeability and capillary pressure, movable oil
2. Displacement and Recovery, sweep, heterogeneity
3. Exercise mobility ratio
4. Reservoir Simulation - Basic Principles
5. Reading and discussion of simulation field cases

Day 5

Recovery and development planning

1. Recovery
2. Principles of Enhanced Oil Recovery
3. Oil Field Development Planning
4. Gas field development planning
5. Exercise: development planning regulations
6. Handling uncertainty
7. Course Recap, Quiz and evaluation

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