

Petroleum Engineering for Non-Engineers

Course Objective:

This course is designed to provide non-engineering petroleum industry technical professionals with a thorough overview of most key aspects of petroleum engineering technology and its applications. The course addresses engineering issues ranging from initial involvement with explorationists, reserves evaluation and field development, production optimization, and all the aspects of well drilling. The sessions will focus on relevant and practical issues; including real case studies.

Who Should Attend:

This course is aimed at non-engineering professionals involved in the oil industry and also for junior exploitation engineers/technologists, and geologists.



Course Instructors:

Saad Ibrahim, P.Eng., an independent consultant and president of Petro Management Group Ltd., established in Calgary (1994). Graduated from the University of Alexandria (Egypt) with B.Sc. in Mechanical Engineering in 1973. He also completed a post-graduate program with the University of Calgary, Canada, in Chemical and Petroleum Engineering in 1983.

Mr. Ibrahim over 35 years of reservoir/production engineering experience in Western Canada and internationally. The focus of Mr. Ibrahim's experience lies in the areas of reservoir management, production optimization, and training. Mr. Ibrahim is a member of the APEGA & SPE

Course Agenda:

- **Overview**
 - Role of petroleum engineers and all technical staff
 - The main components of field development

- **Reservoir Geology**
 - Types of reservoir rocks
 - Main elements of petroleum reservoirs

- **The Drilling Rig**
 - Surface and down hole equipment
 - Properties of drilling fluids
 - Deviated and horizontal drilling
 - Rotary vs. sliding drilling (video clips)
 - Offshore drilling; rig types, safety

- **Well completion techniques**
 - Types of well completion techniques
 - Well cementing, perforating, and casing
 - Drilling operations/problems (video clips)
 - Horizontal well completion/stimulation

- **Formation evaluation techniques**
 - Mud logging, coring, and open hole logging
 - Logging while drilling (LWD) and measure while drilling (MWD) – video clips
 - Wireline testing

- **Rock and fluid properties**
 - Types of rock porosity and measurements (video clip)
 - Definitions of formation permeability
 - Hydrocarbon classifications and fluid sampling

- **Reservoir drives**
 - Primary, secondary, and tertiary recoveries
 - Types of reservoir drives and performance
- **In-place hydrocarbons and reserves determination**
 - Volumetric and material balance methods
 - Decline analysis and empirical methods
- **Reservoir delineation & development**
 - Field development considerations (case study)
 - Types and applications of artificial lift
 - Horizontal well applications

Production operations and optimization

- Well performance and well testing (video clips)
 - Operational problems; diagnoses and remedy
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- **Enhanced Recovery Mechanism**
 - Types of EOR schemes (video clips)
 - Planning and designing of waterflood projects
 - Monitoring of waterflood projects

 - **Unconventional Oil and Gas**
 - Heavy oil development and steam injection
 - Shale gas and Coal Bed Methane (CBM)
 - Tight formations and the application of Multi-stage Frac of Hz Wells (MFHW's) – video clips

 - **Decommissioning and Related Environmental Matters**
 - How wells are abandoned; on-offer and off-shore
 - Impact of decommissioning on environment
 - Case studies/video clips

- **Economic evaluation**
 - **Input data for economic analysis**
 - **Risks and uncertainties**

