



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

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Advanced Enhanced Oil Recovery (EOR) Techniques Training Course

Duration: 5 days

On-Site

01 Who Should Attend

- Reservoir engineers
- Petroleum engineers
- Production engineers
- Drilling and completion professionals
- Geoscientists and reservoir geologists
- EOR and enhanced recovery specialists
- Field development engineers
- Production optimization professionals
- Reservoir simulation specialists
- Asset and operations managers
- Oilfield project managers
- Petroleum economists and energy analysts



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02 About the Course

The **Enhanced Oil Recovery Methods Training Course** provides a comprehensive understanding of advanced techniques used to improve hydrocarbon recovery from mature and challenging oil reservoirs. The course examines the principles, technologies, screening criteria, design considerations, implementation strategies, and economic evaluation of Enhanced Oil Recovery (EOR) projects.

Participants will explore major EOR approaches, including **thermal, gas injection, and chemical recovery methods**, while examining how reservoir characteristics, fluid properties, pressure conditions, well configuration, and field maturity influence method selection. The course also covers reservoir simulation, injection strategies, production optimization, monitoring, performance evaluation, and EOR project economics.

Through practical examples and field-based case studies, participants will develop the ability to evaluate EOR opportunities, select appropriate recovery techniques, identify operational challenges, and develop strategies for maximizing recovery while managing technical and economic risks.



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03 Workshop Objectives

- Master well trajectory design and survey calculations.
- Utilize directional drilling tools and techniques.
- Implement anti-collision analysis and risk assessment.
- Design and build torque and drag models.
- Optimize well planning using advanced software and simulations.
- Troubleshoot and address common challenges in directional drilling.
- Implement well integrity and safety standards.
- Integrate well planning with geological and reservoir models.

04 Module Topics

Module 1: Introduction to Directional Drilling and Well Planning

- Fundamentals of directional drilling and well planning.
- Overview of directional drilling principles and methodologies.
- Setting up a well planning and design workflow.
- Introduction to directional drilling software and tools.
- Best practices for directional drilling and planning.

Module 2: Well Trajectory Design and Survey Calculations

- Mastering well trajectory design and survey calculations.
- Utilizing minimum curvature, radius of curvature, and other survey methods.
- Implementing well path design and optimization.
- Designing and building well trajectory models.
- Best practices for trajectory design.

Module 3: Directional Drilling Tools and Techniques



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- Utilizing directional drilling tools and techniques.
- Implementing measurement while drilling (MWD) and logging while drilling (LWD).
- Utilizing rotary steerable systems (RSS) and mud motors.
- Designing and building directional drilling programs.
- Best practices for directional drilling tools.

Module 4: Anti-Collision Analysis and Risk Assessment

- Implementing anti-collision analysis and risk assessment.
- Utilizing proximity calculations and collision avoidance techniques.
- Implementing risk management and contingency planning.
- Designing and building anti-collision models.
- Best practices for anti-collision.

Module 5: Torque and Drag Modeling

- Designing and build torque and drag models.
- Utilizing friction factors and pipe mechanics.
- Implementing wellbore hydraulics and stress analysis.
- Designing and building torque and drag simulations.
- Best practices for torque and drag.

Module 6: Advanced Software and Simulations

- Optimizing well planning using advanced software and simulations.
- Utilizing drilling engineering software and tools.
- Implementing drilling simulations and modeling.
- Designing and building automated planning workflows.
- Best practices for software applications.

Module 7: Troubleshooting Directional Drilling Challenges



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- Analyzing drilling data and operational issues.
- Troubleshooting and addressing common challenges in directional drilling.
- Utilizing problem-solving techniques for resolution.
- Resolving common directional drilling errors.
- Best practices for troubleshooting.

Module 8: Well Integrity and Safety

- Implementing well integrity and safety standards.
- Utilizing well control and pressure management.
- Implementing safety protocols and risk assessment.
- Designing and building well integrity programs.
- Best practices for well integrity.

Module 9: Integration with Geological Models

- Integrating well planning with geological and reservoir models.
- Utilizing geological data and reservoir simulations.
- Designing and building integrated well planning models.
- Implementing geosteering and formation evaluation.
- Best practices for integration.

Module 10: Complex Directional Drilling Projects

- Understanding how to manage complex directional drilling projects.
- Utilizing project management tools and techniques.
- Implementing program evaluation and reporting.
- Designing scalable drilling solutions.
- Best practices for project management.

Module 11: Advanced Best practices for project management.



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- Directional Drilling Applications
- Exploring advanced directional drilling applications (automated drilling, geosteering).
- Utilizing automated drilling systems and technologies.
- Implementing geosteering and real-time formation evaluation.
- Designing and building advanced drilling systems.
- Optimizing advanced applications for specific use cases.

Module 12: Real-World Directional Drilling Use Cases

- Applying real world use cases for directional drilling in various drilling scenarios.
- Utilizing directional drilling in offshore operations.
- Implementing directional drilling in unconventional reservoirs.
- Utilizing directional drilling in extended reach drilling (ERD).
- Implementing directional drilling in complex geological formations.
- Best practices for real-world applications.

Module 13: Directional Drilling Tools Implementation

- Leveraging directional drilling tools and frameworks for efficient operations.
- Utilizing industry-standard drilling engineering software.
- Implementing data visualization and reporting tools.
- Designing and building automated planning workflows.
- Best practices for tool implementation.

Module 14: Monitoring and Metrics

- Implementing directional drilling monitoring and metrics.
- Utilizing drilling performance indicators and KPIs.
- Designing and building monitoring systems for drilling projects.
- Optimizing monitoring for real-time insights.
- Best practices for monitoring.

Module 15: Future Trends in Directional Drilling



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- ▶ Emerging trends in directional drilling technologies and applications.
- ▶ Utilizing digital drilling technologies and automation.
- ▶ Implementing advanced sensor and monitoring systems.
- ▶ Best practices for future directional drilling.