



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

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Advanced Petroleum Engineering Techniques Training Course

Duration: 10 days

On-Site

01 Who Should Attend

- This course is ideal for:
- Reservoir Engineers
- Production Engineers
- Field Development Managers
- Simulation Engineers
- Petrophysicists
- Completion Engineers
- Data Scientists

02 About the Course

Elevate your petroleum engineering expertise with our comprehensive **Advanced Petroleum Engineering Techniques Training Course**. This program is designed to equip you with the essential skills to apply cutting-edge methodologies and technologies, ensuring optimized reservoir management and enhanced hydrocarbon recovery. In today's complex and competitive energy landscape, mastering advanced petroleum engineering is crucial for organizations seeking to maximize production efficiency and extend field life. Our **advanced petroleum engineering training course** provides hands-on experience and expert guidance, empowering you to implement innovative solutions for real-world applications.

This **advanced petroleum engineering techniques training** delves into the core concepts of reservoir simulation, enhanced oil recovery (EOR), and advanced well performance analysis, covering topics such as numerical modeling, unconventional reservoir development, and intelligent field management. You'll gain expertise in using industry-standard tools and techniques to **advanced petroleum engineering techniques**, meeting the demands of modern oil and gas operations. Whether you're a reservoir engineer, production engineer, or field development manager, this **Advanced Petroleum Engineering Techniques course** will empower you to drive strategic engineering decisions and optimize hydrocarbon production.



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03 Workshop Objectives

- Understand the fundamentals of advanced petroleum engineering techniques.
- Master advanced reservoir simulation and numerical modeling.
- Utilize enhanced oil recovery (EOR) and advanced production techniques.
- Implement unconventional reservoir development and optimization strategies.
- Design and build intelligent field management and automation systems.
- Optimize well performance using advanced data analytics and AI.

04 Module Topics

Module 1: Introduction to Advanced Petroleum Engineering

- Fundamentals of advanced petroleum engineering techniques.
- Overview of advanced methodologies and technologies.
- Setting up an advanced petroleum engineering framework.
- Introduction to advanced software and modeling tools.
- Best practices for advanced petroleum engineering.

Module 2: Advanced Reservoir Simulation

- Mastering advanced reservoir simulation and numerical modeling.
- Utilizing compositional and thermal simulation techniques.
- Implementing advanced gridding and upscaling methods.
- Designing and building complex reservoir models.
- Best practices for reservoir simulation.

Module 3: Enhanced Oil Recovery (EOR) Techniques



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- Utilizing enhanced oil recovery (EOR) and advanced production techniques.
- Implementing chemical EOR and thermal recovery methods.
- Utilizing miscible gas injection and advanced waterflooding.
- Designing and building EOR implementation plans.
- Best practices for EOR.

Module 4: Unconventional Reservoir Development

- Implementing unconventional reservoir development and optimization strategies.
- Utilizing advanced fracture modeling and simulation.
- Implementing microseismic analysis and production optimization.
- Designing and building unconventional reservoir models.
- Best practices for unconventional reservoirs.

Module 5: Intelligent Field Management Systems

- Designing and build intelligent field management and automation systems.
- Utilizing real-time data acquisition and analysis.
- Implementing remote monitoring and control.
- Designing and building automated production optimization systems.
- Best practices for intelligent fields.

Module 6: Advanced Data Analytics and AI

- Optimizing well performance using advanced data analytics and AI.
- Utilizing machine learning for production forecasting.
- Implementing data visualization and predictive analytics.
- Designing and building AI-driven reservoir management systems.
- Best practices for data analytics.

Module 7: Troubleshooting Complex Engineering Challenges



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- Troubleshooting and addressing complex challenges in petroleum engineering.
- Analyzing complex reservoir and production data.
- Utilizing advanced problem-solving techniques for resolution.
- Resolving complex engineering errors.
- Best practices for troubleshooting.

Module 8: Advanced Well Testing and Monitoring

- Implementing advanced well testing and reservoir monitoring programs.
- Utilizing pressure transient analysis and rate transient analysis.
- Implementing permanent downhole gauges and 4D seismic.
- Designing and building monitoring plans.
- Best practices for well testing.

Module 9: Integrated Reservoir Modeling

- Integrating geological, geophysical, and engineering data for comprehensive reservoir modeling.
- Utilizing seismic data and geological models.
- Implementing integrated reservoir simulation and analysis.
- Designing and building integrated reservoir models.
- Best practices for data integration.

Module 10: Large-Scale Engineering Project Management

- Understanding how to manage large-scale advanced petroleum engineering projects.
- Utilizing project management tools and techniques.
- Implementing program evaluation and reporting.
- Designing scalable engineering solutions.
- Best practices for project management.

Module 11: Emerging Technologies in Petroleum Engineering



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- Exploring emerging technologies in petroleum engineering (digital twins, AI for reservoir management).
- Utilizing digital twins for reservoir simulation and monitoring.
- Implementing AI and machine learning for reservoir optimization.
- Designing and building advanced engineering systems.
- Optimizing advanced applications for specific use cases.
- Best practices for advanced applications.

Module 12: Real-World Engineering Use Cases

- Applying real world use cases for advanced petroleum engineering techniques in various field scenarios.
- Utilizing advanced simulation for complex offshore reservoirs.
- Implementing EOR in mature fields.
- Utilizing AI for production optimization in unconventional reservoirs.
- Implementing intelligent field management in large-scale operations.
- Best practices for real-world applications.

Module 13: Advanced Engineering Tools Implementation

- Leveraging advanced engineering tools and frameworks for efficient analysis.
- Utilizing advanced reservoir simulation software.
- Implementing data analytics and visualization tools.
- Designing and building automated engineering workflows.
- Best practices for tool implementation.

Module 14: Monitoring and Metrics

- Implementing advanced petroleum engineering monitoring and metrics.
- Utilizing reservoir performance indicators and KPIs.
- Designing and building monitoring systems for engineering projects.
- Optimizing monitoring for real-time insights.
- Best practices for monitoring.



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Module 15: Future Trends in Petroleum Engineering

- ▶ Emerging trends in advanced petroleum engineering technologies and applications.
- ▶ Utilizing digital transformation and automation.
- ▶ Implementing advanced sensor and monitoring systems.
- ▶ Best practices for future petroleum engineering management.