



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

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Downhole Tools, Equipment & Wellbore Technologies

Duration: 5 days

On-Site

01 Who Should Attend

- Drilling Engineers
- Petroleum Engineers
- Completion Engineers
- Production Engineers
- Well Intervention Engineers
- Directional Drilling Engineers
- Drilling Supervisors
- Wellsite Supervisors
- Drilling and Completion Specialists
- MWD/LWD Engineers and Technicians
- Wireline and Logging Professionals
- Well Integrity Engineers



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02 About the Course

This specialized training course provides participants with a comprehensive understanding of **downhole tools, equipment, and technologies used in drilling, well completion, intervention, and production operations**. It focuses on the principles, applications, selection, operation, monitoring, and optimization of modern downhole systems. Participants will examine a wide range of technologies, including **bottom-hole assemblies (BHAs), drill bits, downhole motors, measurement-while-drilling (MWD), logging-while-drilling (LWD), rotary steerable systems, drilling jars, stabilizers, reamers, wireline tools, completion equipment, and well intervention technologies**. Through practical exercises, technical case studies, and operational scenarios, participants will learn how to select appropriate tools, evaluate tool performance, identify common downhole problems, troubleshoot equipment failures, and apply best practices to improve **wellbore quality, drilling efficiency, operational safety, and overall well performance**.

03 Workshop Objectives

- Utilize measurement while drilling (MWD) and logging while drilling (LWD) systems.
- Implement advanced completion equipment and technologies.
- Design and build robust well intervention strategies.
- Optimize downhole tool performance and maintenance.
- Troubleshoot and address common challenges in downhole operations.
- Implement regulatory compliance and safety standards.
- Integrate downhole tools with drilling and completion programs.
- Understand how to manage large-scale downhole technology projects.

04 Module Topics

Module 1: Introduction to Downhole Tools



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- Fundamentals of downhole tools and technologies.
- Overview of downhole tools and applications.
- Setting up a downhole tools utilization framework.
- Introduction to downhole tool equipment and systems.
- Best practices for downhole tools.

Module 2: Directional Drilling Tools and Techniques

- Mastering directional drilling tools and techniques.
- Utilizing rotary steerable systems (RSS).
- Implementing mud motors and directional assemblies.
- Designing and building directional drilling plans.
- Best practices for directional drilling.

Module 3: MWD and LWD Systems

- Utilizing measurement while drilling (MWD) and logging while drilling (LWD) systems.
- Implementing real-time data acquisition and analysis.
- Utilizing gamma ray, resistivity, and sonic logs.
- Designing and building MWD/LWD programs.
- Best practices for MWD/LWD.

Module 4: Best practices for MWD/LWD.

- Implementing advanced completion equipment and technologies.
- Utilizing intelligent well completions and packers.
- Designing and building completion designs.
- Best practices for completions.
- Implementing expandable tubulars and screens.

Module 5: : Well Intervention Strategies



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- Designing and build robust well intervention strategies.
- Utilizing coiled tubing and wireline operations.
- Implementing hydraulic fracturing and stimulation tools.
- Designing and building intervention programs.
- Best practices for intervention.

Module 6: Tool Performance and Maintenance

- Optimizing downhole tool performance and maintenance.
- Utilizing failure analysis and root cause analysis.
- Implementing preventive maintenance and inspection.
- Designing and building maintenance plans.
- Best practices for tool maintenance.

Module 7: : Troubleshooting Downhole Challenges

- Troubleshooting and addressing common challenges in downhole operations.
- Analyzing tool performance and operational issues.
- Utilizing problem-solving techniques for resolution.
- Resolving common tool failures and errors.
- Best practices for troubleshooting.

Module 8: Regulatory Compliance and Safety

- Implementing regulatory compliance and safety standards.
- Utilizing API and other industry standards.
- Implementing safety management systems and audits.
- Designing and building compliance programs.
- Best practices for compliance.

Module 9: Integration with Drilling Programs



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- Integrating downhole tools with drilling and completion programs.
- Utilizing real-time data integration and analysis.
- Implementing downhole tools in well planning and design.
- Designing and building integrated tool systems.
- Best practices for integration.

Module 10: Large-Scale Downhole Projects

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

Module 11: : Emerging Downhole Technologies

- Exploring emerging technologies in downhole tools (automated drilling, smart completions).
- Utilizing automated drilling systems and robotics.
- Implementing smart completions and remote operations.
- Designing and building advanced downhole systems.
- Optimizing advanced applications for specific use cases.
- Best practices for advanced applications.

Module 12: Real-World Downhole Use Cases

- Applying real world use cases for downhole tools in various well operations.
- Utilizing downhole tools in deepwater drilling.
- Implementing downhole tools in unconventional reservoirs.
- Best practices for real-world applications.
- Utilizing downhole tools in extended reach drilling.

Module 13: Downhole Tools Implementation



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- Leveraging downhole tools and frameworks for efficient implementation.
- Utilizing downhole tool simulation software and databases.
- Implementing data analysis and monitoring tools.
- Designing and building automated tool workflows.
- Best practices for tool implementation.

Module 14: : Monitoring and Metrics

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

Module 15: Future Trends in Downhole Tools

- Emerging trends in downhole tool technologies and applications.
- Utilizing digital twins for downhole tool simulation.
- Implementing AI and machine learning for tool optimization.
- Best practices for future downhole tool management.