Advanced Drilling Best Practices: Optimizing Well Performance

22 – 26 March 2027
Cape Town (South Africa)



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Why This Course

As drilling operations become more complex and energy demands continue to rise, the need for highly skilled drilling professionals has never been greater. Modern drilling environments require mastery of advanced technologies, precise well planning, and the ability to mitigate operational risks while maintaining efficiency and cost effectiveness.

The Advanced Drilling Technologies & Performance Optimization Program is an intensive 1-week course designed for drilling engineers, supervisors, rig personnel, and professionals seeking to elevate their technical capabilities. The program provides a deep dive into cutting-edge drilling methods, advanced well design, fluid management, directional control, and performance optimization strategies that drive success across diverse drilling environments.

Through real-world case studies, hands-on technical exercises, and exposure to innovative drilling tools, participants will develop the expertise needed to lead safe, efficient, and high-performing drilling operations.

What You'll Learn and Practice

By the end of this program, participants will be able to:

- Apply advanced drilling techniques and emerging technologies
- Develop comprehensive well design and high-quality drilling plans
- Optimize drilling fluid selection, formulation, and management
- Solve complex drilling challenges through structured technical approaches
- Implement cost-effective drilling strategies to enhance performance and reduce risks

The Program Flow

Day 1 - Advanced Drilling Technologies & Well Planning

- Overview of modern drilling systems and technological advancements
- Comprehensive strategies for well design and operational planning
- Risk assessment, hazard identification, and mitigation frameworks
- Utilizing real-time data and digital tools for optimized decision-making



Day 2 - Drill String Mechanics & Optimization

- Advanced drill string mechanics, loading, and structural behavior
- Optimizing weight on bit WOB, rotary speed, and drilling parameters
- Vibration analysis and mitigation for improved performance
- BHA design considerations for stability, steerability, and directional control

Day 3 - Drilling Fluid Management & Hydraulics

- Selection and formulation of advanced drilling fluids
- Hydraulics optimization to improve hole cleaning and reduce NPT
- Managing drilling fluids in HPHT, deepwater, and unconventional environments
- Ensuring wellbore stability through fluid-formation interaction analysis

Day 4 - Directional Drilling & Wellbore Trajectory Control

- Advanced directional drilling methods and modern tools
- Optimizing well trajectories for complex subsurface targets
- Geosteering techniques and real-time adjustments
- Key considerations for extended-reach and multilateral wells

Day 5 - Problem Solving & Performance Optimization

- Advanced methods for stuck pipe prevention and recovery
- Lost circulation detection and mitigation strategies
- Maximizing Rate of Penetration ROP using engineering and operational controls
- Case studies and lessons learned from high-difficulty drilling operations

Individual Impact

Participants will gain:

- The ability to develop and implement highly optimized drilling programs
- Strong problem-solving and technical decision-making skills
- Enhanced capabilities in managing complex drilling challenges
- Practical tools to improve operational efficiency and reduce costs
- Increased confidence in supervising or supporting advanced drilling operations

Organizational Impact

Organizations will benefit from professionals who can:



- Improve operational performance and reduce non-productive time NPT
- Enhance well design quality and drilling execution strategies
- Strengthen risk management in drilling environments
- Apply advanced technologies to achieve safer and more efficient operations
- Drive cost savings through optimized drilling practices and technical excellence

Training Methodology

The program incorporates:

- Technical case studies from real drilling operations
- Engineering simulations and parameter optimization exercises
- Group problem-solving activities and scenario-based discussions
- Hands-on exposure to digital drilling tools and real-time data systems
- Expert-led sessions combining theory with practical field insights

Beyond the Course

Participants will return ready to:

- Lead advanced drilling operations with improved precision and confidence
- Solve operational challenges using modern technologies and analytical tools
- Optimize drilling performance across different geological and operational contexts
- Contribute to safer, more productive, and more cost-efficient drilling programs

