Advanced Drilling Techniques Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Drilling Techniques Training Course is designed to equip drilling professionals, petroleum engineers, and field operators with cutting-edge competencies in modern well construction, optimization, and intervention technologies. The program integrates digital oilfield solutions, real-time drilling analytics, directional drilling optimization, managed pressure drilling (MPD), HPHT well control, and automated rig systems to meet the demands of complex reservoirs and ultra-deep drilling environments. Participants will gain exposure to industry best practices aligned with Industry 4.0 oil & gas transformation, AI-driven drilling optimization, and performance-based drilling operations.

With the increasing complexity of offshore and unconventional resources, the need for precision-driven drilling strategies has never been greater. This course bridges theory and practice by incorporating simulation-based learning, case-driven analysis, and field-proven methodologies used in high-performance drilling environments. Learners will develop advanced decision-making skills to improve rate of penetration (ROP), reduce non-productive time (NPT), enhance wellbore stability, and optimize drilling cost efficiency using modern engineering tools and predictive technologies.

Programme Curriculum

Advanced Drilling Techniques Training Course

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Course Duration

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Course Objectives

1. Master advanced directional drilling and well trajectory optimization
2. Apply AI-driven drilling performance analytics
3. Understand Managed Pressure Drilling (MPD) systems and applications
4. Enhance HPHT (High Pressure High Temperature) well control techniques
5. Optimize Rate of Penetration (ROP) using real-time data
6. Reduce Non-Productive Time (NPT) through predictive analytics
7. Implement digital oilfield and smart rig automation systems
8. Analyze formation evaluation and geosteering technologies
9. Apply wellbore stability and drilling fluid optimization techniques
10. Develop skills in kick detection and blowout prevention systems (BOP)
11. Improve deepwater and offshore drilling efficiency
12. Integrate drilling simulation software and digital twins
13. Execute cost-efficient drilling performance management strategies

Target Audience

1. Drilling Engineers
2. Petroleum Engineers
3. Well Site Supervisors
4. Rig Operators and Drillers
5. Offshore Installation Managers
6. Oil & Gas Project Engineers
7. Reservoir and Production Engineers
8. Energy Industry Technical Consultants

Course Modules

Module 1: Fundamentals of Advanced Drilling Systems

- Drilling system architecture overview
- Rotary vs directional drilling comparison
- Modern rig components and automation
- Drilling hydraulics fundamentals
- Case Study: Efficiency upgrade in North Sea drilling operations

Module 2: Directional Drilling & Well Trajectory Design

- Well path planning techniques
- Horizontal and extended reach drilling
- Surveying and measurement tools
- Geosteering fundamentals
- Case Study: Shale reservoir directional optimization

Module 3: Managed Pressure Drilling (MPD)

- MPD principles and applications
- Pressure control methodologies
- Surface and subsurface MPD systems
- Real-time pressure monitoring
- Case Study: HP reservoir drilling using MPD in Gulf of Mexico

Module 4: HPHT Drilling Operations

- High-pressure well design
- Temperature-resistant drilling fluids
- Casing and cementing challenges
- Safety and risk mitigation
- Case Study: HPHT gas well development in deep formations

Module 5: Drilling Fluids Engineering

- Mud rheology and properties
- Synthetic vs water-based fluids
- Cuttings transport optimization
- Fluid loss control techniques
- Case Study: Lost circulation management in offshore drilling

Module 6: Well Control & Blowout Prevention

- Kick detection systems
- BOP stack operations
- Well shut-in procedures
- Emergency response protocols
- Case Study: Blowout prevention success in offshore rig

Module 7: Real-Time Drilling Data Analytics

- Sensor-based monitoring systems
- Real-time decision-making
- Data visualization dashboards
- Predictive drilling analytics
- Case Study: ROP improvement using real-time analytics

Module 8: Digital Oilfield Technologies

- IoT in drilling operations
- Cloud-based drilling management
- Digital twin modeling
- Remote operations centers

- Case Study: Smart rig implementation in Middle East field

Module 9: Formation Evaluation & Logging

- LWD and MWD systems
- Wireline logging interpretation
- Formation pressure analysis
- Reservoir characterization
- Case Study: Tight gas reservoir evaluation

Module 10: Wellbore Stability Analysis

- Stress modeling techniques
- Collapse and fracture prediction
- Drilling mud weight optimization
- Borehole integrity monitoring
- Case Study: Wellbore failure prevention in deep shale play

Module 11: Drilling Optimization Techniques

- ROP enhancement strategies
- Bit selection optimization
- Torque and drag reduction
- Vibrational analysis
- Case Study: Cost reduction in offshore drilling campaign

Module 12: Offshore & Deepwater Drilling

- Subsea drilling systems
- Floating rig operations
- Marine riser management
- Deepwater safety protocols
- Case Study: Deepwater Gulf drilling project execution

Module 13: Casing and Cementing Design

- Casing program planning
- Cement slurry design
- Zonal isolation techniques
- Well integrity assurance
- Case Study: Multistage cementing in deviated wells

Module 14: Automation & Smart Drilling Rigs

- AI-based rig controls
- Automated drilling systems
- Robotics in drilling operations
- Equipment condition monitoring
- Case Study: Autonomous drilling rig deployment

Module 15: Risk Management & Drilling Economics

- Risk assessment models

- Cost estimation techniques
- Time-to-drill optimization
- Economic evaluation of drilling projects
- Case Study: Budget optimization in multi-well campaign

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

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