TECHNICAL
EDUCATION
ACADEMY

School of Engineering

COURSE PROGRAMME

000515

WELL001a - Basic Drilling Technology

The Basic Drilling Technology course is designed to provide participants with a comprehensive understanding of drilling technology and its related concepts.



Learn from the Best in the Business!

Course overview

Foundation level

Why take this course

The Basic Drilling Technology course is designed to provide participants with a comprehensive understanding of drilling technology and its related concepts. This course covers all aspects of drilling, including planning, equipment, operations, and advanced drilling technologies.

The course begins by discussing the importance of planning in drilling operations. Participants will learn about the types of well plans, directional drilling, data acquisition, and determining the operating window. The course covers the various pressures involved in drilling operations, including hydrostatic and geopressures, and how pore/fracture pressures impact drilling operations.

The course also covers the drilling rig and its components, including the hoisting system, rotating system, circulating system, power system, and downhole sub-surface equipment such as drill string and BHA elements, MWD, LWD, and downhole motors. Participants will learn about the different types of drilling fluids and their purpose, components, properties, testing, and control.

Hydraulics and hole cleaning are essential aspects of drilling technology, and the course covers fluid flow pressure losses and ECD to ensure successful drilling operations. Participants will learn about the basics of well construction and the types of casing and cementing processes to ensure well integrity and stability.

The course also covers typical drilling operations, such as on bottom drilling ahead, sliding, connections, tripping, and formation testing/evaluation. Additionally, participants will learn about advanced drilling technologies such as underbalanced drilling and managed pressure drilling.

Throughout the course, participants will engage in practical exercises, case studies, and simulations to reinforce their understanding of the material. The course will be delivered in a flexible and interactive format, allowing participants to learn at their own pace and interact with other professionals in the industry.

In summary, the Basic Drilling Technology course provides participants with a comprehensive understanding of drilling technology and its related concepts. This course is ideal for individuals looking to start a career in the drilling industry, drilling engineers and technicians, rig managers and supervisors, and anyone seeking a thorough understanding of drilling operations.

Course overview — continued

Who it is for and how it helps

This course is designed for individuals who are involved in or seeking a career in the oil and gas drilling industry, including:

- Drilling Engineers and Technicians
- Rig Managers and Supervisors
- Well Site Geologists and Geophysicists
- Drilling Fluid Engineers
- Completion Engineers and Technicians
- HSE Professionals and Managers
- Operations Managers and Directors
- Project Managers and Coordinators
- Regulatory and Compliance Professionals
- Anyone interested in gaining a thorough understanding of the drilling process, equipment, and safety protocols in the oil and gas industry.

What you will learn

- Develop a comprehensive well plan, considering various types of wells and drilling methods, data acquisition, operating window, and pressure considerations
- Identify the different types of drilling rigs, equipment systems, and downhole sub-surface equipment, including their components and functions
- Understand the various types of drilling fluids and their purpose, drilling fluid components, properties, testing, and control
- Demonstrate knowledge of hydraulics and hole cleaning, fluid flow pressure losses, and ECD to ensure successful drilling operations
- Understand casing design, construction, and cementing processes to ensure well integrity and stability
- Perform typical drilling operations, including on bottom drilling, sliding, connections, tripping, and formation testing/evaluation
- Explain advanced drilling technologies, such as underbalanced drilling and managed pressure drilling
- Apply well control principles, kick detection, shut-in procedures, and BOP operations to ensure safe drilling operations
- Understand well completion and intervention processes, including wellhead assembly, tubing, and packers, and use of coiled tubing, wireline, and hydraulic workover
- Adhere to HSE requirements and industry standards in drilling operations and manage drilling costs effectively

Curriculum

Modules 01–04

01 Planning the Drilling Project

- Types of Well Plan
- Directional / Horizontal Drilling
- Data Acquisition
- Determining the Operating Window
- Pressures (Hydrostatics and Geopressures)
- Understanding How Pore/Fracture Pressures Impacts Drilling Operations
- Elements of the Well Plan
- The AFE (Approval for Expenditure) & Typical Drilling Prognosis

02 The Drilling Rig and Its Components

- Types of Drilling Units
- Drilling Rig Equipment Systems
- The Hoisting System
- The Rotating System
- The Circulating System
- The Power System
- Other Tools and Equipment

03 Downhole Sub-Surface Equipment

- Drill String and BHA Elements
- MWD (Measurement While Drilling)
- LWD (Logging While Drilling)
- Downhole Motors

04 Types of Drilling Fluids and Their Purpose

- Water Based
- Oil Muds
- Non-Aqueous
- Gasified / Aerated Fluids
- Drilling Fluid Components

Curriculum

Modules 04–08 · Module 04 — continued

- Continuous Phase
- Solid Components
- Additives
- Drilling Fluid Properties
- Testing and Control
- Daily Mud Report

05 Hydraulics and Hole Cleaning

- Fluid Flow Pressure Losses and ECD

06 Casing

- Basic Well Construction
- Building the Wellhead
- Types of Casing
- Casing Specification
- Basic Casing Design
- Casing Seat Selection

07 Cementing

- Definition of Oilfield Cement
- Types of Cement
- Uses of Cement

08 Typical Drilling Operations

- On Bottom Drilling Ahead
- Sliding (Deviated and Horizontal Wells)
- Connections
- Tripping
- E-Logging
- Formation Testing / Evaluation

Curriculum

Modules 09–13

09 Advanced Drilling Technologies

- Underbalanced Drilling
- Managed Pressure Drilling

10 Well Control

- Well Control Principles
- Kick Detection and Shut-In Procedures
- Blowout Preventers (BOPs)
- Well Control Methods

11 Well Completion

- Well Completion Overview
- Wellhead Assembly and Christmas Trees
- Tubing and Packers
- Completion Fluids and Perforating

12 Well Intervention

- Well Intervention Overview
- Coiled Tubing
- Wireline
- Snubbing
- Hydraulic Workover

13 HSE (Health, Safety, and Environment) in Drilling Operations

- Safety Management System (SMS)
- Hazard Identification and Risk Assessment
- Personal Protective Equipment (PPE)
- Environmental Protection

Curriculum

Modules 14–15

14 Regulatory Requirements and Standards

- National and International Regulations
- Industry Standards and Best Practices

15 Cost Management in Drilling Operations

- Cost Estimation and Budgeting
- Cost Control Measures
- Performance Metrics and Reporting

Joining the programme

Contact the Academy and quote course code 000515 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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