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COURSE BROCHURE

Drilling Fluids Fundamentals and Mud Programme Design Training Course

13 – 17 December 2026
Muscat

Drilling Fluids Fundamentals and Mud Programme Design Training Course

Ref: 1504_55654 **Date:** 13 – 17 December 2026 **Location:** Muscat **Fees:** 6500 GBP

Drilling Fluids Fundamentals and Mud Programme Design is a 1-week training course for drilling engineers, mud engineers and rig supervisors, leading to one work product: a mud programme for a chosen well section. Deeper, deviated and depleted wells leave narrower windows between pore and fracture pressure, so fluid choices now decide whether a section is drilled cleanly or lost to stuck pipe and losses. The course is delivered by Jupiter Prime Training.

Why Drilling Fluids Fundamentals and Mud Programme Design Matters Now

Three forces shape mud work today: complex well paths and narrow pressure margins that leave little room for density or rheology errors, environmental limits on discharging cuttings and base oils, and operators who measure rig crews on non-productive time. Teams that design fluids deliberately hold the hole open, protect the reservoir and keep waste volumes down; teams that react late spend days on wellbore instability, differential sticking and lost circulation. The course rests on the Bingham plastic and power law rheology models, equivalent circulating density ECD management, and standard field test procedures for mud properties.

Who Gains Most from Drilling Fluids Fundamentals and Mud Programme Design

- Drilling engineers who write well plans and set mud weight windows
- Mud engineers who test, treat and report fluid properties at the rig
- Rig supervisors who act on hole condition signals during drilling and tripping
- Solids control technicians who run shakers, hydrocyclones and centrifuges
- Completion staff who need drill-in fluids that protect reservoir permeability

Operator and contractor crews that send an engineer, a mud engineer and a supervisor together gain most, since mud decisions pass through all three.

Drilling Fluids Fundamentals and Mud Programme Design Capabilities

Participants work section by section, matching fluid type, density, rheology and inhibition to the lithology and pressures each hole interval presents.

- Specify mud weight from pore and fracture pressure data — well control and loss avoidance
- Weigh water-based against oil-based and synthetic systems — cost, inhibition and discharge limits
- Calculate rheology, hole cleaning and ECD from field readings — directional drilling teams
- Test filtration and filter cake quality — differential sticking and formation damage decisions
- Design a solids control layout and dilution plan — rig equipment and waste volume

- Build contingency treatments for losses, instability and contamination — rig supervisors

Key Drilling Fluids Fundamentals and Mud Programme Design Terms

- Mud weight — the density of the drilling fluid, which sets the hydrostatic pressure acting on the open hole.
- Plastic viscosity — the part of flow resistance caused by solids and liquid friction in the mud.
- Yield point — the stress needed to start mud flowing, linked to its ability to lift cuttings.
- Equivalent circulating density — the effective mud density at the bit while pumping, including annular friction.
- Filter cake — the layer of solids deposited on the borehole wall as mud filtrate enters the formation.
- Shale inhibition — chemical action that limits clay swelling and dispersion in water-sensitive formations.

Drilling Fluids Fundamentals and Mud Programme Design Day by Day

Day 1: Mud Functions and Well Context

- Core Mud Functions From Pressure Control to Cooling — Fluid Selection Priorities
- Pore and Fracture Pressure Windows — Mud Weight Boundaries
- Lithology Columns and Offset Well Records — Section Hazard Mapping
- Field Testing Kit for Density, Funnel and Retort — Daily Mud Reports
- Environmental Discharge and Cuttings Limits — System Choice Constraints

Day 2: Fluid Systems and Chemistry

- Bentonite and Polymer Water-Based Muds — Top-Hole and Inhibition Choices
- Inhibitive Salts, Glycols and Amines — Reactive Shale Control
- Oil-Based and Synthetic Emulsions — Stability and Electrical Readings
- Weighting Agents and Sag Tendency — Density Stability in Deviated Holes
- Reservoir Drill-In Fluids — Permeability Protection

Day 3: Rheology, Hydraulics and Filtration

- Bingham Plastic and Power Law Models — Viscometer Interpretation
- Annular Velocity and Cuttings Transport — Hole Cleaning Indicators
- ECD and Surge-Swab Pressures — Tripping Speed Limits
- Low-Pressure and High-Temperature Filtration Tests — Filter Cake Quality
- Fluid Loss Additives and Bridging Particle Sizing — Seepage Control

Day 4: Solids Control and Hole Problems

- Shakers, Hydrocyclones and Centrifuges — Solids Removal Efficiency
- Low-Gravity Solids Tracking and Dilution — Mud Cost Control
- Lost Circulation Material Pills — Loss Zone Treatment Choices
- Differential Sticking and Wellbore Instability — Prevention and Spotting Fluids
- Contamination by Cement, Salt and Acid Gas — Treatment Response

Day 5: Practising the Mud Programme for a Well Section

- Section Hazard Summary From Offset Data — Applying Day 1 Mapping
- Fluid System and Formulation Choice — Applying Day 2 Chemistry
- Rheology and ECD Targets by Depth — Applying Day 3 Hydraulics
- Solids Control and Contingency Treatments — Applying Day 4 Methods
- Mud Programme for the Selected Section — Peer Review

Applying Drilling Fluids Fundamentals and Mud Programme Design After the Course

- Compare the next well's planned mud weights and rheology with offset well hole problems and adjust the targets.
- Audit solids control performance on the rig by tracking low-gravity solids against dilution volumes for one section.

Drilling Fluids Fundamentals and Mud Programme Design Questions FAQ

What are drilling fluids fundamentals and mud programme design, and why do they matter now?

They are the principles of choosing, testing and treating drilling mud, and the method for writing section-by-section fluid plans. They matter now because pressure windows are narrower and non-productive time is closely watched.

Which roles gain most from drilling fluids fundamentals and mud programme design?

Drilling engineers, mud engineers and rig supervisors gain most, with solids control technicians and completion staff also benefiting.

How does drilling fluids fundamentals and mud programme design differ from a high-pressure well design course?

It concentrates on the fluid itself, from chemistry and rheology to solids control. Casing design and well control equipment for extreme pressures belong to specialist well design courses.

What do you bring back from drilling fluids fundamentals and mud programme design?

You bring back a mud programme for one well section, with fluid type, property targets, solids control settings and contingency treatments ready for review.

Drilling Fluids Fundamentals and Mud Programme Design: The Way Forward

The mud programme for a well section first informs the choice of fluid system in the well plan. Drilling engineers, mud contractors and rig supervisors use it to agree property targets before spud. After the section is drilled, the rheology targets and loss treatments deserve another look against actual hole behaviour.