

**COURSE OVERVIEW DE0852-4D**  
**Advanced Drilling Practices**

**Course Title**

Advanced Drilling Practices

**Course Reference**

DE0852-4D

**Course Duration/Credits**

Four days/2.4 CEUs/24 PDHs

**Course Date/Venue**

Session(s)	Date	Venue
1	September 16-19, 2024	Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA
2	December 16-19, 2024	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE



**Course Description**



***This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***

This course is designed for engineers and field personnel involved in the planning and implementation of drilling programs. The course covers all aspects of drilling technology, emphasizing both theory and practical application. Today's drilling personnel must have a working knowledge of all these disciplines in order to effectively drill a well.



The course provides all the fundamentals necessary to drill a well whether it is a shallow well or a complex, high pressure well. Computer programs are used to design many aspects of the modern well and the course will provide the participants with the theory behind most programs along with practical implementation. Course will also include advanced Mud Logging principles and operations.



Further, the course will also discuss the drilling process, drilling sequence, BHA design and PDC bit design; the rheology models, filtration control, open hole logging and cased hole logging; the components of BHA design; the stuck pipe, fishing operations and tools; the side track operations including whip stock technique and safety alerts; and the sticking mechanisms and drilling practices.



### Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an advanced knowledge on drilling practices
- Specialized knowledge and understanding in standard HSE procedures at the rig site
- Specialization in cost control, evaluating alternative drilling methods
- Demonstrate specialized knowledge and understanding of Hydraulics
- Constituents of Drilling fluids and its function, pressure losses in the circulating system and ECD
- Specialized knowledge in bit selection and dull bit grading
- Specialized knowledge and understanding in casing and drill string design, selection of casing seats, BOP equipment
- Demonstrate knowledge and understanding in cement slurry design
- Specialized knowledge in directional and horizontal drilling
- Project cost analysis
- Demonstrate specialized knowledge and understanding of wellbore pressure and different well controls for different scenarios
- Ability to coach others
- Drill a well cost effectively and maximize penetration rate
- Evaluate stuck pipe problems and avoid potential problems by optimizing hole cleaning and ROP
- Design, drill string and BOP/wellheads
- Design and implement bit and hydraulics programs
- Recognize and evaluate well control problems by effectively using Mud Logging principles and techniques
- Illustrate drilling process, drilling sequence, BHA design and PDC bit design
- Describe rheology models and apply filtration control, open hole logging and cased hole logging
- Identify the components of BHA design as well as stuck pipe, fishing operations and tools
- Carryout side track operations including whip stock technique and safety alerts
- Recognize sticking mechanisms and apply drilling practices

### Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

**Who Should Attend**

This course provides an advanced overview on drilling practices for senior engineers, field and drilling personnel, drilling engineering supervisors, drilling operations section leaders, tool pushers, managers, well engineers and other technical staff who are involved in the planning and implementation of drilling programs.

**Course Certificate(s)**

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

**Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations:


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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.



### Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



**Dr. Abla Rhouma (USA)**, PhD, MSc, BSc, is a **Senior Drilling & Petroleum Engineer** with extensive years of experience within the **Oil & Gas, Refinery and Petroleum** industries. Her expertise lies extensively in the areas of **ESP Application Engineering, Advanced ESP Training, Oil Industry Orientation, Crude Oil Recovery, Heavy Oil Processing, Oil & Gas Reserves Evaluation, Crude Oil Artificial Lift Operations, Fishing Operations, Pipe Sticking, Washover Operations, Milling Operations, Wireline Fishing, Fishing in Cavities, Sidetracking Methods, Thru-Tubing Fishing, Coiled-Tubing-**

**Conveyed Tubing & Drill-Pipe Cutting, Drilling Operation, Completion & Workover Operations, Casing Cementing Operations, Wireline & LWD Sensors, Mud Logging Services, Drilling Rig, Bits & BHA, Mud Pumps, Cementing Operations, Cementing & Casing, Coiled Tubing Operations, Coiled Tubing Technology, Coiled Tubing Design, Petroleum Engineering, Drilling Operations, Horizontal & Directional Drilling, Drilling Optimization & Well Planning, Drill Bit & Drilling Hydraulics, Drilling & Production Equipment, Extend Reach Drilling, Rock Mechanics, Rock Physics, Seismic Sequence Stratigraphy, Applied Reservoir Engineering & Management, Naturally Fractured Reservoirs, Practical Reservoir Engineering, Steam Flood Reservoir Management, 3D Reservoir Modelling, Reservoir Surveillance & Management, Integrated Reservoir Characterization, Naturally Fractured Reservoir Engineering, Drilling Fluids Technology, Surface BOP Stack, Hydraulic Fracturing, Decline Curve Analysis, Oil & Gas Fields Operations, Rig System, Reservoir Simulation, Enhancing Production System, Drilling & Hydraulic Fracture, Technical Writing in Drilling Fluid, Reservoir Fluids, Oil Analysis, Formation Evaluation (PVT), Bottom Hole, Wellbore Friction & Surface Pressures, Step Rate Tests/Dfit Analysis, Friction Pressures, Tortuosity versus Perforations, Estimated Leak-Off & Pre-Treatment Frac Gradients, Water Analysis, Benchtop Pilot Testing, Linear & Hybrid Borate & Zirconate Gel Systems, Real-Time Fluid Analysis & Management, Drilling Fluid, Reservoir Fluid & Well Testing, Gas Measurement & Formation Evaluation (PVT), Petroleum Design Processing, Workover & Completion, Advanced Drilling Technology, Well Head Equipment, Oilfield Operation, Hydraulic Fracture and Drilling & Completion Engineering. She has also experience with some of the software's like the Eclipse, Fracpro, Ansys Fluent, Cemstress, Paso, Gohfer, Cemcat, Sas, CMG and modeling Proppant Transport using Ansys Fluent Software. She is currently the **Procurement Department Director** of **ALPHA Engineering Int'l.**, wherein she is involved in developing and executing a long-term strategy to facilitate improvements for procurement services.**

During Dr. Abla's career life, she has gained his practical and field experience through his various significant positions as the **Operations Manager, Business Development Manager, Client Relation Manager, Senior Petroleum Engineer, Lead Cement Engineer, Drilling & Hydraulic Fracture Engineer, Hydraulic Fracturing Field Engineer II, Frac Engineer, Drilling Engineer, Cementing Technical Engineer, Cementing Field Engineer, QA Supervisor, Supervisor, Chemistry Lab Technician, Head of Teacher Assistance & Research Assistance** and Intern for numerous international companies such as the **Schlumberger, ConocoPhillips, Energen, Quality Repair & Modeling LLC, Liberty Oilfield Services, Sahara Chemical Solutions, Colorado School of Mines, Start Scientific Inc., MSI Oil Service and Total Oil & Gas.**

Dr. Abla has **PhD, Master's and Bachelor's** degree in **Petroleum Engineering** from the **Colorado School of Mines** and the **Missouri University of Science & Technology, USA** respectively. Further, she is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management (ILM)**, and a member of the **Society of Petroleum Engineers (SPE) International** and **American Association of Drilling Engineers (AADE)**. She has further published scientific papers and delivered numerous trainings, workshops and conferences worldwide.

**Course Fee**

Al Khobar	<b>US\$ 6,750</b> per Delegate + <b>VAT</b> . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Abu Dhabi	<b>US\$ 6,750</b> per Delegate + <b>VAT</b> . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

**Accommodation**

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

**Training Methodology**

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

**Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

**Day 1**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 - 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Drilling Process</b> <i>Drilling Services • Drilling Sequence • BHA Design &amp; Components • Drilling Rig • Directional &amp; Horizontal Drilling • History of PDC's • Main Features of PDC's • PDC Bit Design • Body Material • Bit Profile</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Drilling Process (cont'd)</b> <i>Bit Selection &amp; Dull Bit Grading • Gauge Protection • Cutter Shape • Hydraulics • Uses of PDC Bits • Other Application of PDC Bits • Limitations of PDC Bits • Possible PDC Bit Improvements • Well Types • Site Preparation</i>



1100 – 1215	<b>Drilling Process (cont'd)</b> Standard HSE Procedures at the Rig Site • Drilling Sequence • Cost Control & Evaluating Alternative Drilling Methods • Constituents of Drilling Fluids & its Function, Pressure Losses in the Circulating System and ECD • Cementing Equipment • Cement Slurry Design • Viscosity – Simple Definition • Viscosity – Importance • Viscosity – Technical Definition • Shear rate – Definition
1215 – 1230	Break
1230 – 1330	<b>Drilling Process (cont'd)</b> Shear Stress/Shear Rate Illustration • Plastic Viscosity – Definitions • Causes of Plastic Viscosity Changes • Methods to Decrease Plastic Viscosity • Yield Point – Definitions • Causes of Yield Point Increases • Methods for Decreasing Yield Points • Gel Strength – Definition • Gel Strength – Importance
1330 – 1420	<b>Rheology Models</b> Newtonian Fluids • Non-Newtonian Fluids • Rheological Models • Bingham Plastic Equation • Bingham Plastic Model • Power Law Equation
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2**

0730 – 0830	<b>Rheology Models (cont'd)</b> Power Law Model • n Value • “n” Value Relationships • K Value • “K” Value Relationships • Power Law Model Weakness
0930 – 0945	Break
0945 – 1100	<b>Filtration Control</b> Filtration Control Importance • Filtration Control Types • Static Filtration Characteristics • Dynamic Filtration Characteristics • Fluid Loss Measurement Static (API) • Fluid Loss – Static (HTHP)
1100 – 1230	<b>Filtration Control (cont'd)</b> Fluid Loss Measurement Static HT-HP • API vs HT-HP • Dynamic HT-HP • Darcy’s Law • Relationship of Filtrate Volume vs Times • Filter Cake Quality • Filter Cake Materials – Beneficial
1230 – 1245	Break
1245 – 1330	<b>Logging Services</b> Open Hole Logging • Cased Hole Logging
1330 – 1420	<b>BHA Design</b> BHA Design (Components) • Project Cost Analysis • Drill a Well Cost Effectively & Maximize Penetration Rate • Wellbore Pressure & Different Well Controls for Different Scenarios
1420 – 1430	Recap
1430	Lunch & End of Day Two





**Day 3**

0730 – 0830	<b>Stuck Pipe</b> <i>Stuck Pipe Introduction • Sticking Mechanism • Evaluate Stuck Pipe Problems &amp; Avoid Potential Problems by Optimizing Hole Cleaning &amp; ROP</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Fishing Operations &amp; Tools</b> <i>Casing &amp; Drill String Design • Selection of Casing Seats • BOP Equipment • Design, Drill String &amp; BOP/Wellheads • Design &amp; Implement Bit &amp; Hydraulics Programs</i>
1100 – 1230	<b>Side Track Operations (Including Whip Stock Technique)</b>
1230 – 1245	<i>Break</i>
1245 – 1330	<b>Safety Alerts</b>
1330 – 1420	<b>Sticking Mechanisms</b> <i>Unconsolidated Formations • Mobile Formations • Fracture and Faulted Formations • Naturally Over-pressure Shale Collapse • Induced Over-Pressured Shale Collapse • Reactive Formations • Hole Cleaning • Tectonically Stressed Formations • Solids Induced Pack-Off</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4**

0730 – 0830	<b>Drilling Practices - Different Problems Linked with Actual Case Studies</b> <i>Drilling Problems • AEB-3 Problem &amp; Required Fishing Operations</i>
0830 – 0930	<b>Drilling Practices - Actual Drilling Well Case Study</b> <i>Introduction • Alamein Field • Well NEAL-21 Summary • Well NEAL-21 Summary - Lithology Column CSG Design</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Drilling Practices - Actual Drilling Well Case Study (cont'd)</b> <i>NEAL # 21 Drilling History • NEAL # 21 Drilling Parameters (12 ¼" OH) • NEAL # 21 Drilling History - 8 ½" Vertical Section • NEAL # 21 Drilling Parameters (8 ½" OH)</i>
1100 – 1230	<b>Drilling Practices - Actual Drilling Well Case Study (cont'd)</b> <i>NEAL # 21 OHL, 7" Liner W/ CMT &amp; CBL-VDL-GR-CCL • NEAL # 21 (WBS, CSG &amp; CMT Summary) • NEAL # 21 Progress Charts (Time VS Depth) • NEAL # 21 Progress Charts (Cost VS Depth)</i>
1230 – 1245	<i>Break</i>
1245 – 1345	<b>Coach Others</b>
1345 – 1400	<b>Course Conclusion</b>
1400 - 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>





**Practical Sessions**

This practical and highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

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