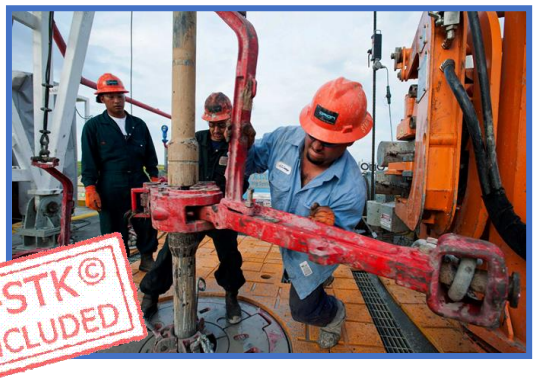
COURSE OVERVIEW DE1052

Drill String and Bits-Drill-String Design and Failure Prevention Bit Selection, Bit Hydraulics

Course Title
Drill String and Bits-Drill-String Design and Failure Prevention Bit Selection, Bit Hydraulics



Course Date/Venue
February 11-15, 2024/Hourous Meeting Room, Holiday Inn Suites Maadi, Cairo, Egypt

Course Reference
DE1052

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

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

This course is designed to provide participants with a detailed and up-to-date overview of Drill String and Bits-Drill-String Design and Failure Prevention Bit Selection, Bit Hydraulics. It covers the drill string and BHA; the functions of drill pipe, drillcollars, grades of drill pipe and strength properties; the thread types and tool joints; the calculations of approximate weight of drill pipe and tool joint; the drill collar weight and neutral point; the bending strength ratio and margin of over-pull; and the drill string design methods as per API method.

During this interactive course, participants will learn the slip crushing, pressure-area method, stuck point calculations for drill string weight and jar placement; the drill string design for directional and horizontal wells; the DST considerations, torque and drag calculations; the types of subs, jars, shock subs, reamers and stabilizers; the drill string failure identification and inspection methods; the fluid flow in wellbores, laminar and turbulent flow; the Bingham plastic and power law calculations; the hydraulics calculations and ECD calculation; and the pumps and liner selection and hole cleaning.

Course Objectives

Upon the successful completion of this course, participants will be able to:

- Apply and gain an in-depth knowledge on drill string design and hydraulics
- Discuss drill string and BHA including the functions of drill pipe, drillcollars, grades of drill pipe and strength properties
- Identify thread types and tool joints as well as calculate approximate weight of drill pipe and tool joint
- Recognize drill collar weight, neutral point, bending strength ratio and margin of over-pull
- Apply drill string design methods as per API method and illustrate slip crushing, pressure-area method, stuck point calculations for drill string weight and jar placement
- Illustrate drill string design for directional and horizontal wells including DST considerations and torque and drag calculations
- Enumerate the various types of subs as well as jars, shock subs, reamers and stabilizers
- Discuss drill string washouts and fatigue mechanisms and apply drill string failure identification, inspection methods, etc.
- Illustrate fluid flow in wellbores, laminar and turbulent flow, Bingham plastic and power law calculations
- Carryout hydraulics calculation, ECD calculation pumps and liner selection and hole cleaning

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 overview of all significant aspects and considerations of drill string design and hydraulics for drilling engineers, drilling supervisors, drilling operations section leaders and drilling engineering section leaders.

Course Fee

US$ 8,000 per Delegate + **VAT**. 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.

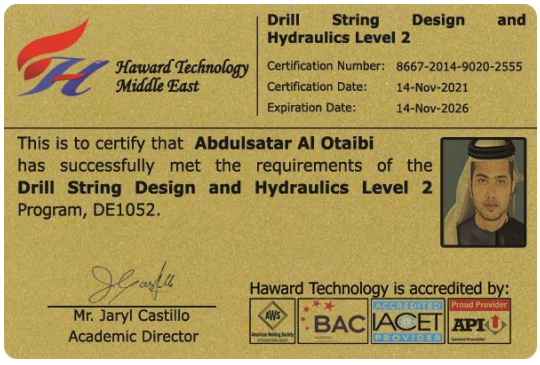
Course Certificate(s)

(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-



(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-21

HTME No. 8667-2014-9020-2555

Participant Name: Abdulsatar Al Otaibi

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
DE1052	Drill String Design and Hydraulics Level 2	10 Nov-14 Nov, 2021	32.5	3.25

Total No. of CEU's Earned as of TOR Issuance Date **3.25**

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 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 Association 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 is accredited by

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Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- 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 **3.0 CEUs** (Continuing Education Units) or **30 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.

- 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.

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 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:

Ms. Diana Helmy, PgDip, MSc, BSc, is a **Senior Petroleum & Geologist** with extensive years of experience within the **Oil & Gas**, **Refinery** and **Petrochemical** industries. Her expertise widely covers in the areas of **Tubular & Pipe** Handling, **Tubular Strength**, **Casing & Tubing** Design, **Production/Injection Loads** for Casing Strings & Tubing, **Drilling** Loads, **Drilling & Production Thermal** Loads, **Well** Architecture, **Wellhead Integrity**, **Well Integrity & Artificial Lift**, **Well Integrity** Management, **Well** Completion & Workover, Applied **Drilling** Practices, Horizontal **Drilling**, **Petroleum** Production, **Resource & Reserve Evaluation**, **Reserves Estimation & Uncertainty**, Methods for **Aggregation of Reserves & Resources**, **Horizontal & Multilateral Wells**, **Well Completion & Stimulation**, **Artificial Lift System Selection & Design**, **Well** Testing & Oil Well Performance, **Well** Test Design Analysis, **Well Test** Operations, **Well Testing & Perforation**, **Directional** Drilling, **Formation Damage** Evaluation & Preventive, **Formation Damage** Remediation, **Drilling & Formation Damage**, Simulation Program for The **International Petroleum Business**, **Well** Testing & Analysis, **Horizontal & Multilateral Wells & Reservoir** Concerns, **Oil & Gas Analytics**, **Petrophysics & Reservoir Engineering**, **Subsurface Geology & Logging** Interpretation, **Petroleum Geology**, **Geophysics**, **Seismic** Processing & Exploration, **Seismic** Interpretation, **Sedimentology**, **Stratigraphy & Biostratigraphy**, **Petroleum Economy**, **Core** Analysis, Well Logging Interpretation, **Core Lab Analysis** & **SCAL**, **Sedimentary Rocks**, **Rock** Types, Core & Ditch Cuttings Analysis, Clastic, Carbonate & Basement Rocks, **Stratigraphic Sequences**, **Petrographically** Analysis, Thin Section Analysis, Scanning Electron Microscope (**SEM**), X-ray Diffraction (**XRD**), Cross-Section Tomography (**CT**), **Conventional & Unconventional** Analysis, **Porosity & Permeability**, **Geological & Geophysical** Model, **Sedimentary** Facies, **Formation Damage** Studies & Analysis, **Rig** Awareness, 2D&3D **Seismic** Data Processing, Static & Dynamic Correction, Noise Attenuation & Multiple Elimination Techniques, Velocity Analysis & Modeling and various software such as Petrel, OMEGA, LINUX, Kingdom and Vista. She is currently a **Senior Consultant** wherein she is responsible in different facets of **Petroleum & Process Engineering** from managing **asset integrity**, **well integrity process**, **pre-commissioning/commissioning** and **start up** onshore & offshore process facilities.

During her career life, Ms. Diana worked as a **Reservoir Geologist**, **Seismic Engineer**, **Geology Instructor**, **Geoscience Instructor & Consultant** and **Petroleum Geology Researcher** from various international companies like the **Schlumberger**, Corex Services for Petroleum Services, Petrolia Energy Supplies and Alexandria University.

Ms. Diana has a **Postgraduate Diploma** in **Geophysics**, **Master's** degree in **Petroleum Geology** and **Geophysics** and a **Bachelor's** degree in **Geology**. Further, she is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.

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: ***Sunday, 11th of February 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Drill string & BHA***
0900 - 0930	***Functions of Drill Pipe, Drillcollars, Grades of Drill Pipe & Strength Properties***
0930 – 0945	*Break*
0945 – 1030	***Thread Types***
1030 – 1230	***Tool Joints***
1230 – 1245	*Break*
1245 – 1330	***Calculations of Approximate Weight of Drill Pipe & Tool Joint***
1330 - 1420	***Drill Collar Weight & Neutral Point***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 12th of February 2024***

0730 – 0830	***Bending Strength Ratio***
0830 - 0930	***Margin of Over-Pull***
0930 – 0945	*Break*
0945 – 1100	***Drill String Design Methods: API Method***
1100 – 1230	***Slip Crushing***
1230 – 1245	*Break*
1245 – 1330	***Pressure-Area Method***
1330 - 1420	***Stuck Point Calculations for Drill String Weight, Jar Placement***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 13th of February 2024***

0730 – 0830	***Drill String Design for Directional & Horizontal Wells***
0830 - 0930	***DST Considerations, Torque & Drag Calculations***
0930 – 0945	*Break*
0945 – 1100	***Types of Subs***
1100 – 1230	***Jars***
1230 – 1245	*Break*
1245 – 1420	***Shock Subs***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4:	***Wednesday, 14th of February 2024***
0730 – 0830	***Reamers & Stabilizers***
0830 - 0930	***Drill String Washouts & Fatigue Mechanisms: Field Examples***
0930 – 0945	*Break*
0945 – 1100	***Drill String Failure Identification, Inspection Methods, Etc.***
1100 – 1230	***Fluid Flow in Wellbores***
1230 – 1245	*Break*
1245 – 1420	***Laminar & Turbulent Flow***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5:	***Thursday, 15th of February 2024***
0730 – 0830	***Bingham Plastic & Power Law Calculations***
0830 - 0930	***Hydraulics Calculations***
0930 – 0945	*Break*
0945 – 1100	***ECD Calculation***
1100 – 1230	***Pumps & Liner Selection***
1230 – 1245	*Break*
1245 – 1300	***Hole Cleaning***
1300 – 1315	***Course Conclusion***
1315 – 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

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

Course Coordinator

Kamel Ghanem, Tel: +971 2 30 91 714, Email: kamel@haward.org