

COURSE OVERVIEW DE0452

Drilling Rig Systems

Course Title

Drilling Rig Systems

Course Date/Venue

Session 1: April 14-18, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Session 2: October 05-09, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

DE0452

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

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 to provide participants with a detailed and up-to-date overview of Rig Component. It covers the role and importance of rigs component and the key components of petrochemical rigs; the power generation systems including diesel engines, electric generators and hybrid systems; the types of drilling fluids including safety standards, environmental regulations and best practices; the hoisting system components, drill string components, top drive systems and pipe handling and racking systems; and the best practice for the maintenance and inspection of hosting components.

During this interactive course, participants will learn the mud pumps and systems and solid control systems including mud properties and management; the environmental management and the basic principles of fluid dynamics as applied to drilling fluid circulation in rigs; the well control, blowout preventers (BOPs), monitoring systems in rig and risk assessment in rig operations; the emergency response and contingency planning for well control incidents; the latest advancements in rig automation including robotic drilling systems; the advanced materials and sustainable practices in rig operations including energy efficiency and reduced environmental footprint

Course Objectives

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

- Apply and gain an in-depth knowledge on rig component
- Explain the role and importance of rigs component and the key components of petrochemical rigs
- Recognize power generation systems including diesel engines, electric generators and hybrid systems
- Identify the types of drilling fluids including safety standards, environmental regulations and best practices
- Recognize hoisting system components, drill string components, top drive systems and pipe handling and racking systems
- Employ best practice for the maintenance and inspection of hosting components
- Discuss mud pumps and systems and solid control systems including mud properties and management
- Apply environmental management through various techniques and technologies for handling waste produced by drilling fluids
- Describe the basic principles of fluid dynamics as applied to drilling fluid circulation in rigs
- Carryout well control, blowout preventers (BOPs), monitoring systems in rig and risk assessment in rig operations
- Employ emergency response and contingency planning for well control incidents
- Discuss the latest advancements in rig automation including robotic drilling systems
- Digitalize rig operations, identify advanced materials and apply sustainable practices in rig operations including energy efficiency and reduced environmental footprint

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 rig component for rig managers, drilling engineers, drilling supervisors, drilling technicians, safety officers, maintenance technicians, HSE (health, safety, and environment) personnel, operators and roustabouts, quality control inspectors and training coordinators.

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.

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: -

-  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.

-  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

Accommodation

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

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. Steve Ehrenberg, PhD, MSc, BSc, is a **Senior Geologist & Reservoir Engineer** with **45 years** of extensive experience within the **Oil & Gas, Petrochemical and Refinery** industries. His wide experience covers in the areas of **Core & Log Integration, Water Saturation, Coring & Core Analysis, Special Core Analysis, Log Interpretation, Cased-Hole Logging, Core Calibration, Core Analysis, Core-to-Log Data Integration (SCAL), Wireline Logging, Mud Logging, Cased Hole Logging, Production Logging, Well Logging, Reservoir Management, Reservoir Appraisal & Development, Carbonate Reservoir Management, Fractured Reservoirs Evaluation & Management, Naturally Fractured Reservoir, Integrated Carbonate Reservoir Characterization, Geological Modelling, Reservoir Characterization, Geomodelling, Development Geology, Petroleum Geology, Exploration Production, Structural Geology, Wellsite Geology, Analytic Modelling Methods, Sedimentary Geology, Geophysics, Geophysical Exploration, Reservoir Engineering, Reservoir Engineering Applications, Reservoir Engineering & Stimulation, Reservoir Characterization, Clastic Reservoir, Carbonate Reservoir Petrology, Subsurface Facies Analysis, Borehole Images, Geophysical Methods, Oil & Gas Exploration, Marine & Petroleum Geology, Reservoir Performance Using Classical Methods, Fractured Reservoir Evaluation & Management, Reservoir Surveillance & Management, Reservoir Monitoring, , Reservoir Volumetrics, Water Drive Reservoir, Reservoir Evaluation, Well Surveillance, Well Testing, Well Testing & Oil Well Performance, Well Log Interpretation (WLI), Rock Physics & Seismic Data, Formation Evaluation, Well Testing & Data Interpretation, Pore Pressure Prediction and Oil & Gas Reserves Estimations, Well Workover Supervision, Description and Prediction of Reservoir Quality, Sequence Stratigraphy of Carbonate Systems and Introductory Geology.**

During his career life, Dr. Ehrenberg held significant positions and dedication as **Consultant, Professor, Senior Reservoir Geologist, Senior Geologist, Research Geologist, Associate Professor, Assistant Professor** and **Senior Instructor/Trainer** from various international companies and universities such as the Badley Ashton & Associates Ltd., Khalifa University of Science and Technology, Sultan Qaboos University, PanTerra Geoconsultants B.V, UAE University, Statoil, Stavanger, Shell Development Company and Northern Illinois University.

Dr. Ehrenberg has a **PhD, Master's and Bachelor's** degree in **Geology** from the **University of California, USA** and **Occidental College, USA**, respectively. Further, he is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM)**, a **Certified Instructor/Trainer** and has delivered numerous trainings, workshops, courses, seminars and conferences internationally.

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	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0900	Overview of Petrochemical Rig Operations: Introduction to the Role and Importance of Rigs in the Petrochemical Industry, Including Types of Rigs Used
0900 – 0930	Key Components of Petrochemical Rigs: Detailed Breakdown of the Primary Components of a Rig such as Derricks, Masts, and Substructures
0930 – 0945	Break
0945 – 1130	Power Generation Systems: Exploration of Power Sources Including Diesel Engines, Electric Generators, and Hybrid Systems Specifically Tailored for Petrochemical Applications
1130 – 1215	Drilling Fluids in Petrochemical Applications: Introduction to Types of Drilling Fluids Used and their Significance in the Petrochemical Industry
1215 – 1230	Break
1230 – 1330	Safety Standards & Protocols: Overview of Industry Safety Standards, Environmental Regulations, and Best Practices
1330 – 1420	Interactive Session: Discussion on the Integration of Rig Operations within Petrochemical Plants and Refineries
1420 – 1430	Recap
1430	Lunch & End of Day one

Day 2

0730 – 0830	Hoisting System Components: In-depth Analysis of Components like the Crown Block, Traveling Block, and Hook, Focusing on Their Specific Uses in Petrochemical Operations
0830 – 0930	Drill String Components: Detailed Exploration of Drill Pipes, Heavy-Weight Drill Pipes, Drill Collars, and Their Configurations
0930 – 0945	Break

0945 – 1100	Top Drive Systems: Examination of the Advantages of Using Top Drive Systems Over Traditional Rotary Tables in Petrochemical Drilling Operations
1100 – 1215	Pipe Handling & Racking Systems: Automation and Safety Features in Modern Pipe Handling Systems
1215 – 1230	Break
1230 – 1330	Maintenance of Hoisting Equipment: Best Practices for the Maintenance and Inspection of Hoisting Components
1330 – 1420	Case Studies: Review of Specific Incidents or Challenges Faced in Petrochemical Rig Operations Related to Drilling and Hoisting
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0830	Mud Pumps & Systems: Types of Mud Pumps Used, Their Operation, and Maintenance Specific to Petrochemical Applications
0830 – 0930	Solid Control Systems: Importance of Shale Shakers, Desanders, Desilters, and Centrifuges in Maintaining Drilling Fluid Integrity
0930 – 0945	Break
0945 – 1100	Mud Properties & Management: Detailed Discussion on the Properties of Drilling Muds, Including Viscosity, Density, and Chemical Composition Tailored for Petrochemical Drilling
1100 – 1215	Environmental Management: Techniques and Technologies for Handling Waste Produced by Drilling Fluids
1215 – 1230	Break
1230 – 1330	Fluid Dynamics & Hydraulics: Basic Principles of Fluid Dynamics as Applied to Drilling Fluid Circulation in Rigs
1330 – 1420	Workshop: Practical Exercises in Mixing and Testing Drilling Fluids with Different Chemical Properties.
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0830	Well Control: Basics of Well Control, Including Understanding Pressures and Blowout Prevention
0830 – 0930	Blowout Preventers (BOPs): Detailed Examination of BOP Types, Functions, and Maintenance Practices
0930 – 0945	Break
0945 – 1100	Monitoring Systems in Rigs: Use of Sensors and Real-Time Monitoring Systems to Ensure Safe Operations in Petrochemical Settings
1100 – 1215	Risk Assessment in Rig Operations: Techniques and Methodologies for Assessing and Managing Risks in Rig Operations
1215 – 1230	Break
1230 – 1330	Emergency Response & Contingency Planning: Planning and Execution of Emergency Response Strategies for Well Control Incidents
1330 – 1420	Simulation Exercise: Interactive Simulation of a Well Control Situation Using Virtual Technology
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 – 0930	Automation in Rig Components: Discussion on the Latest Advancements in Rig Automation, Including Robotic Drilling Systems
0930 – 0945	Break
0945 – 1100	Digitalization of Rig Operations: Impact of AI, and Machine Learning on Rig Monitoring and Operation
1100 – 1230	Advanced Materials & Equipment: Innovations in Materials Science that Enhance the Durability and Efficiency of Rig Components
1230 – 1245	Break
1245 – 1315	Sustainability Practices: Sustainable Practices in Rig Operations, Including Energy Efficiency and Reduced Environmental Footprint
1315 – 1345	Future Trends in Rig Technology: Exploration of Upcoming Technologies and Their Potential Impact on the Petrochemical Industry
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
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

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