

COURSE OVERVIEW DE0377
Advanced Well Testing & Interpretation

Course Title

Advanced Well Testing & Interpretation

Course Date/Venue

Please refer to page 3

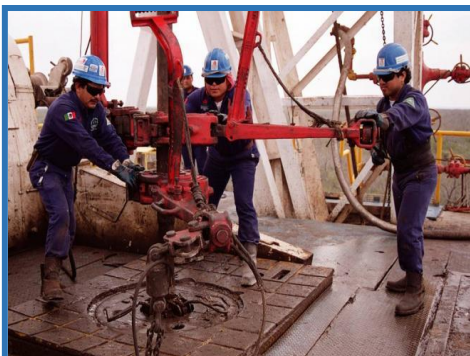
Course Reference

DE0377

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 advanced overview of Well Testing and Interpretation. It covers the importance of well testing in reservoir management; the different fluid types and flow patterns in reservoirs; the basics of well test analysis including pressure transient analysis and its application; the wellbore dynamics and temperature effects and how wellbore conditions affect test data; the safety considerations in well testing including safety protocols and environmental considerations; the buildup and drawdown tests and pressure derivative analysis using systematic techniques and applications; the type curves analysis in well test interpretation; the rate transient analysis and techniques for analyzing variable rate tests; and the key considerations for effective well test design.

Further, the course will also discuss the interference testing through design and interpretation; the pulse testing using effective methodology and applications; the multi-rate testing through techniques for analyzing tests with variable rates; the wellbore storage and skin effect and gas well testing using specific considerations and methodologies; the challenges of naturally fractured reservoirs; and the horizontal well testing through specific methodologies and interpretations.

During this interactive course, participants will learn the reservoir boundaries and heterogeneities and the impact on tests; the pressure transient behavior in different reservoir types and various reservoir models; the integration of well test data and integrated reservoir management using well test data for reservoir management decisions; the new trends and technologies on well test data interpretation; the pressure transient analysis in unconventional reservoirs; the enhanced oil recovery (EOR) and well testing and the impact of EOR on well test interpretation; the best practices for data management, handling and reporting; and emerging technologies and methodologies on future well testing.

Course Objectives

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

- Apply and gain an advanced knowledge on well testing and interpretation
- Discuss the importance of well testing in reservoir management as well as identify different fluid types and flow patterns in reservoirs
- Explain the basics of well test analysis including pressure transient analysis and its application
- Recognize wellbore dynamics and temperature effects and explain how wellbore conditions affect test data
- Emphasize safety considerations in well testing including safety protocols and environmental considerations
- Analyze and interpret buildup and drawdown tests as well as carryout pressure derivative analysis using systematic techniques and applications
- Utilize type curves in well test interpretation and apply proper techniques for analyzing variable rate tests
- Plan key considerations for effective well test design as well as design and interpret interference testing
- Carryout pulse testing using effective methodology and applications and multi-rate testing through techniques for analyzing tests with variable rates
- Identify and analyze wellbore storage and skin effect and carryout gas well testing using specific considerations and methodologies
- Test and interpret challenges of naturally fractured reservoirs and carryout horizontal well testing through specific methodologies and interpretations
- Determine reservoir boundaries and heterogeneities and identify the impact on tests
- Classify pressure transient behavior in different reservoir types and analyze various reservoir models
- Integrate well test data and carryout integrated reservoir management using well test data for reservoir management decisions
- Adapt new trends and technologies on well test data interpretation as well as carryout pressure transient analysis in unconventional reservoirs including specific challenges and solutions
- Carryout enhanced oil recovery (EOR) and well testing and recognize the impact of EOR on well test interpretation
- Apply best practices for data management, handling and reporting as well emerge technologies and methodologies on future well testing

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 of all significant aspects and considerations of well testing and interpretation for drilling engineers, production engineers, reservoir engineers, well engineers, petroleum engineers, drilling operations section leaders, field supervisors, drilling engineering supervisors, oil field consultant, well servicing/workover/completion staff and field production staff.

Course Date/Venue

Session(s)	Date	Venue
1	February 04-08, 2024	Boardroom, Warwick Hotel Doha, Doha, Qatar
2	May 05-09, 2024	
3	September 01-05, 2024	
4	November 03-07, 2024	

Accommodation

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

Course Fee

US\$ 8,500 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 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 **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.

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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:



Mr. Brendon Billings, MSc, BSc, is a Senior Petroleum Engineer and Well Service Consultant with over 30 years of international experience in Drilling/Reservoir/Petroleum Engineering and Well Service Operations. He is a recognized authority in “Hands On” Service and Drilling Operations, Well Completions (Riggless Operations), Product Optimization, Wellhead Operations, Wellbore Interventions, High Volume Lift Project Management, Reservoir Optimization, Well Testing & Interpretation, Wire/Slickline Equipment and Operations, Coil Tubing, Water Flooding, Electric Submersible Pumps (ESPs), Gas Lifts & Steam Assist Gravity Drain (SAGD) Applications, Facility Inspection, Root Cause Failure Management and Power Factor Management. Currently, he is the President of a large specialized engineering services provider to the North-American Sedimentary Basin Production and other international clients. Moreover, he occupies a consultant position and remains to offer his expertise in many areas of the drilling discipline and is well recognized & respected for his process, procedural expertise, modus operandi as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Mr. Billings has worked for many international companies and has spent several years **managing technically complex wellbore interventions** in both **drilling & servicing**. He is a **well regarded** for his **process, procedural expertise and modus operandi**. Further, he was the **Projects Manager** at **Sherrit Petreola** where he was fully responsible for all **Reservoir Development** activities. He has spent **more than 2000 days** total on **Rig Floors** for **Drilling (onshore/offshore) and Well Servicing Operations** jobs. Mr. Billings was the **Senior Applications Expert** for **Schlumberger Canada (REDA Services)** where he was greatly involved in high volume lift and reservoir optimization projects including specialty endeavours like **SAGD and Gas Lift**. He lead special projects for alternative technology applications and was referred to as the **‘technical specialist’** for severe services on ESP applications and had provided in-house & client instruction for ESP application schooling. Previously, he was the **Artificial Lift Services Developer** for **Weatherford**, a leading provider of oilfield services equipment for drilling, evaluation, completion, production and intervention areas. Herein, he was tasked to introduce new ESP technology and lead a project team for ESP facility development & design. Much earlier in his career, he has held positions such as **Operations Supervisor, Rig Consultant, Project Manager, Regional Manager, Engineering Representative, International Engineering Support Technician, Facility Services Manager and Power Plant Engineer**.

Mr. Billings has **Master and Bachelor** degrees in **Petroleum Engineering and Power Engineering**. He is a **licensed Professional Engineer**, a **Certified Instructor/Trainer** and a well-respected member of the **Society of Petroleum Engineers (SPE)**. Further, he has conducted **numerous industry short courses and SPE workshops**.

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 & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 - 0930	Overview of Well Testing: Its Importance in Reservoir Management
0930 – 0945	<i>Break</i>
0945 – 1100	Reservoir Fluids & Flow Regimes: Different Fluid Types and Flow Patterns in Reservoirs
1100 – 1230	Basics of Well Test Analysis: Pressure Transient Analysis and its Application
1230 – 1245	<i>Break</i>
1245 – 1330	Wellbore Dynamics & Temperature Effects: How Wellbore Conditions Affect Test Data
1330 – 1420	Safety Considerations in Well Testing: Emphasizing Safety Protocols and Environmental Considerations
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Buildup & Drawdown Tests: Detailed Analysis and Interpretation
0830 – 0930	Pressure Derivative Analysis: Techniques and Applications
0930 – 0945	<i>Break</i>
0945 – 1100	Type Curve Analysis: Utilizing Type Curves in Well Test Interpretation
1100 – 1230	Rate Transient Analysis: Techniques for Analyzing Variable Rate Tests
1230 – 1245	<i>Break</i>
1245 – 1330	Well Test Design & Planning: Key Considerations for Effective Test Design
1330 – 1420	Case Studies: Real-world Examples of Pressure Transient Analysis
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Interference Testing: Theory, Design and Interpretation
0830 – 0930	Pulse Testing: The Methodology and Applications
0930 – 0945	<i>Break</i>
0945 – 1100	Multi-rate Testing: Techniques for Analyzing Tests with Variable Rates
1100 – 1230	Wellbore Storage & Skin Effect: Identification and Analysis
1230 – 1245	<i>Break</i>
1245 – 1420	Gas Well Testing: Specific Considerations and Methodologies
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0830	Naturally Fractured Reservoirs: Testing and Interpretation Challenges
0830 – 0930	Horizontal Well Testing: Specific Methodologies and Interpretations
0930 – 0945	Break
0945 – 1100	Reservoir Boundaries & Heterogeneities: Identification and Impact on Tests
1100 – 1230	Pressure Transient Behavior in Different Reservoir Types: Analysis of Various Reservoir Models
1230 – 1245	Break
1245 – 1330	Integration of Well Test Data: Enhancing Reservoir Models with Test Data
1330 – 1420	Group Work on Complex Reservoirs: Applying Concepts to Hypothetical Scenarios
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 – 0830	Integrated Reservoir Management: Using Well Test Data for Reservoir Management Decisions
0830 – 0930	Real-time Well Test Data Interpretation: New Trends and Technologies
0930 – 0945	Break
0945 – 1030	Pressure Transient Analysis in Unconventional Reservoirs: Specific Challenges and Solutions
1030 – 1130	Enhanced Oil Recovery (EOR) & Well Testing: Impact of EOR on Well Test Interpretation
1130 – 1230	Data Management & Reporting: Best Practices for Data Handling and Reporting
1230 – 1245	Break
1245 – 1345	Future of Well Testing: Emerging Technologies and Methodologies
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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