COURSE OVERVIEW DE0100
Well Completion Design & Operations, Well Stimulation and Workover Planning

Course Title
Well Completion Design & Operations, Well Stimulation and Workover Planning

Course Date/Venue
Session 1: April 06-10, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar
Session 2: August 31-September 04, 2025/ Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar

Course Reference
DE0100

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 primarily designed for drilling, production and completion engineers and supervisors needing a practical understanding and an appreciation of well completion design and operations, well stimulation and work over planning. It explains how completion configurations are varied to meet well objectives and to maximize well productivity. Design concepts and methods are presented together with downhole tools and their selection criteria.

Completion types and design for vertical, horizontal and multilateral wells, design and optimization of tubing based on tubing performance analysis (Inflow performance analysis, liquid and gas hold up during fluid flow and forces on tubing), downhole equipment, tubing accessories, wellhead equipment including sub sea completion. Also, fluid flow through perforations and perforation techniques; communication tests; wireline operations; reservoir stimulation; and hydraulic fracture treatment design and optimization are extensively reviewed**.** Local case studies are also provided.

Course Objectives

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

- Apply systematic techniques in well testing, completion and operations, well stimulation and workover
- Optimize tubing dimensions for maximum production and estimate the pressure losses in tubing for different rock & fluid properties
- Use different subsurface completion equipments and accessories and select packers and packer settings
- Operate the well head equipments properly and calculate geometries and dimensions casing and tubing hangers
- Identify the different special consideration for horizontal and multilateral completions on wellbore, tubing and casing configuration
- Recognize the components of perforation of oil and gas wells such as completion fishing operations, well stimulation and fracturing, well testing, and well integrity
- Carryout the various procedures of communication tests
- Practice the process of wireline operations
- Discuss the elements of reservoir stimulation and increase the knowledge in understanding of stress and rock properties involved in the simulation techniques

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 covers systematic techniques and methodologies on well testing, completion and operation, well stimulation and workover for well and senior petroleum engineers, drilling and senior drilling supervisors, reservoir and senior reservoir engineers, geologists, production and completion engineers and supervisors needing a practical understanding and an appreciation of well completion design and operation, well stimulation and work over planning.

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: -

- 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.

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.

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.

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 & Introductions*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Well Completion Design*** *Single & Dual Completion Design (Packers, Nipples, Tubing, DHSV's, Blast Joints Flow Couplings, Seal Assemblies, Expansion Joints, WLEG, Sliding Sleeves, Ported Nipples) • Planning Essentials Prior to Drilling (Safety, Economics)*
0930 – 0945	*Break*
0945 – 1100	***Well Completion Design (cont'd)*** *Wellbore Tubing-Casing Configuration • Completion Procedures (Well Completion Fluids, Well Control & Damage Prevention)*
1100 – 1230	***Well Completion Design (cont'd)*** *Work Over Considerations • Artificial Lift Requirements on Completion Design*
1230 – 1245	*Break*
1245 – 1420	***Well Completion Design (cont'd)*** *Inflow Performance • Completion Variations (Primary Completion - Oil & Gas Wells, Multiple Completion, Secondary Recovery Production Well Completion & Injection Well Completion)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Interval Selection Consideration & Optimization of Tubing Dimensions for Maximum Production*** *Production Mechanism for Different Reservoir Types • Completion Efficiency Consideration • Inflow Performance Relationship (IPR) & Effect of Partial Penetration on IPR*
0930 – 0945	*Break*
0945 – 1100	***Interval Selection Consideration & Optimization of Tubing Dimensions for Maximum Production (cont'd)*** *Typical IPR Case Studies for Both Oil & Gas Reservoirs • Bottom Hole Flowing Pressure Requirements*
1100 – 1230	***Interval Selection Consideration & Optimization of Tubing Dimensions for Maximum Production (cont'd)*** *Estimation of Pressure Losses in Tubing for Different Rock & Fluid Properties • Development of Tubing Performance Curve & Optimization of Tubing Dimensions for Maximum Production*
1230 – 1245	*Break*
1245 – 1420	***Interval Selection Consideration & Optimization of Tubing Dimensions for Maximum Production (cont'd)*** *Prediction Rate & Selection of Material Properties Based on Analysis of Forces on Tubing of Tubing • Specialized Software's are Used for Case Studies & Analysis*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Subsurface Completion Equipment & Accessories*** *Forces on Packers & Tubing Movements • Completion Material Selection • Completion of Running & Retrieving • Selection Consideration of Packers & Packer Settings*
0930 – 0945	*Break*
0945 – 1100	***Subsurface Completion Equipment & Accessories (cont'd)*** *Tubing Accessories & Subsurface Safety and Flow Control Valves • Typical Case Studies*
1100 – 1230	***Well Head Equipment*** *Geometries & Dimensions Casing & Tubing Hanger • Well Heads for Topside & Subsea Completions • Christmas & Subsea Trees*
1230 – 1245	*Break*
1245 – 1420	***Well Head Equipment (cont'd)*** *Flow Line, Cokes & Other Control • Valves & Flow Regulating Valves*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Special Consideration for Horizontal & Multilateral Completions*** *Wellbore, Tubing & Casing Configuration • Well Killing • Tubing Size Selection • Special Equipment for Horizontal & Multilateral Completions • Running & Operational Procedure of Subsurface Equipment*
0930 – 0945	*Break*
0945 – 1100	***Perforation of Oil & Gas Wells*** *Completion Fishing Operations • Perforation Methods & Equipment • Well Perforating & Cased Hole Logs • Well Stimulation & Fracturing • Well Testing • Well Integrity*
1100 – 1230	***Perforation of Oil & Gas Wells (cont'd)*** *Basics of Shape Charge & its Penetration Mechanism • Selection & Evaluation of Shape Charge • API Testing Procedure of Shape Charge Penetration • Shape Charge Gun Categories & Their Application*
1230 – 1245	*Break*
1245 – 1420	***Perforation of Oil & Gas Wells (cont'd)*** *Special Tools & Operations • Calculation of Flow Through Perforation Tunnels & Estimation Production from the Perforation Interval • Nitrogen Lifting • Coiled Tubing Operations*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Communication Tests***
0930 – 0945	*Break*
0945 – 1100	***Wireline Operations***
1100 – 1230	***Reservoir Stimulation*** *Introduction to Different Stimulation Techniques • Understanding of Stress & Rock Properties Involved in the Selection of Stimulation Techniques • Design Procedure of Hydraulic Fracture Treatment*
1230 – 1245	*Break*
1245 – 1345	***Reservoir Stimulation (cont'd)*** *Economic Evaluation of Stimulation Treatment Coupled with a Production • Model Based on NPV • Specialized Softwares Used for Local Case Studies and Analysis*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
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

Reem Dergham, Tel: +974 4423 1327, Email: reem@haward.org