COURSE OVERVIEW DE0250
Subsurface Production Operations

Course Title
Subsurface Production Operations

Course Date/Venue
Session 1: April 27- May 01, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar
Session 2: September 21-25, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar

Course Reference
DE0250

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

Course Description

This practical, 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 subsurface production operations. It covers the inflow and outflow performances, completion systems, tubing selection, design and installation; the perforation methods, formation damage, matrix acidizing and hydraulic fracturing; and the well production problems such as toxic material production, inorganic –scale formation, corrosion, etc.

During this interactive course, participants will learn the artificial lift selection, ESP system selections and performance calculations; the gas lift systems; the latest principles of hydraulic pumping in oil wells, progressing cavity pumping design systems; and the evaluation and installation of downhole plunger equipment, wellhead and plunger surface equipment.

Course Objectives

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

- Apply and gain an in-depth knowledge on subsurface production operations
- Discuss the inflow and outflow performances, completion systems and carryout tubing selection, design and installation
- Describe perforation methods, formation damage, matrix acidizing and hydraulic fracturing
- List well production problems such as toxic material production, inorganic –scale formation, corrosion, etc.
- Perform artificial lift selection, ESP system selections and performance calculations and design gas lift systems
- Employ the latest principles of hydraulic pumping in oil wells, progressing cavity pumping design systems as well as the evaluation and installation of downhole plunger equipment, wellhead and plunger surface equipment

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 surface production operations for production engineers, drilling engineers, process engineers, petroleum engineers and field operations engineers, superintendents, supervisors and foremen. Technical and operations staff from other disciplines, who require a cross-training to or a basic understanding of the subsurface production operations will find this course very useful.

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.

Accommodation

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

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.

Course Instructor

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. Hesham Abdou, PhD, MSc, BSc, is a **Senior Drilling & Petroleum Engineer** with over **35 years** of integrated industrial and academic experience as a **University Professor**. His specialization widely covers in the areas of **Drilling & Completion** Technology, **Directional Drilling**, **Horizontal & Sidetracking**, **Drilling Operation** Management, **Drilling & Production** Equipment, **ERD Drilling & Stuck Pipe** Prevention, **Natural & Artificial Flow Well Completion**, **Well Testing** Procedures & Evaluation, **Well** Performance, **Coiled Tubing** Technology, **Oil Recovery Methods** Enhancement**, Well Integrity** Management, **Well Casing & Cementing**, **Acid Gas** Removal, **Heavy Oil Production** & Treatment Techniques, **Crude Oil Testing & Water Analysis**, **Crude Oil & Water** Sampling Procedures, **Equipment Handling** Procedures, **Crude & Vacuum Process** Technology, **Gas Conditioning & Processing**, **Cooling Towers** Operation & Troubleshooting, **Sucker Rod Pumping**, **ESP & Gas Lift**, **PCP & Jet Pump**, **Pigging** Operations, Electric Submersible Pumps (**ESP**), Progressive Cavity Pumps (**PCP**), **Water Flooding**, **Water Lift Pumps** Troubleshooting, **Water System Design** & Installation, **Water Networks Design** Procedures, **Water Pumping** Process, **Pipelines**, **Pumps**, **Turbines**, **Heat Exchangers**, **Separators**, **Heaters**, **Compressors**, **Storage Tanks**, **Valves** Selection, **Compressors**, **Tank & Tank Farms** Operations & Performance, **Oil & Gas Transportation**, **Oil & Gas Production** Strategies, **Artificial Lift** Methods, **Piping & Pumping** Operations, Oil & Water Source Wells Restoration, **Pump** Performance Monitoring, **Rotor Bearing** Modelling, **Hydraulic** Repairs & Cylinders, **Root Cause Analysis**, **Vibration & Condition** Monitoring, **Piping Stress** Analysis, **Amine Gas Sweetening & Sulfur Recovery**, Heat & Mass Transfer and Fluid Mechanics.

During his career life, Dr. Hesham held significant positions and dedication as the **General Manager**, **Petroleum Engineering Assistant General Manager**, **Workover Assistant General Manager**, **Workover Department Manager**, **Artificial Section Head**, **Oil & Gas Production Engineer** and **Senior Instructor/Lecturer** from various companies and universities such as the Cairo University, Helwan University, British University in Egypt, Banha University and Agiba Petroleum Company.

Dr. Hesham has a **PhD** and **Master** degree in **Mechanical Power Engineering** and a **Bachelor** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer** and a **Peer Reviewer**. Dr. Hesham is a member of Egyptian Engineering Syndicate and the Society of Petroleum Engineering. Moreover, he has published technical papers and journals 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 & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Inflow & Outflow Performance*** *The Production System • Reservoir Inflow Performance • Wellbore Flow Performance • Flow Through Chokes • System Analysis*
0930 – 0945	*Break*
0945 – 1115	***Completion Systems*** *Packers • Methods of Conveyance • Metallurgy • Elastomers • ISO and API Standards • Packer Rating Envelopes • Flow Control Accessories*
1115 – 1215	***Completion Systems (cont'd)*** *Subsurface Safety Systems • Cased-Hole Applications • Multilateral Completions • Operational Well Modes • Impact of Length and force Changes To The Tubing String • Combination Tubing/Packer Systems*
1215 – 1230	*Break*
1230 – 1420	***Tubing Selection, Design & Installation*** *Oilfield Tubing • API/ISO Tubing Requirements • Tubing Design Factors • Tubing Inspection • Tubing Handling • Coiled Tubing*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Perforating*** *Perforating Methods • Basic Perforating Design-Variables of Flow Through A Perforation • Temperature Effect • Basic Perforating Design-What Is Necessary for The Optimum Flow Path • Improving Flow Capacity • Cement and Casing Damage • Perforating Multiple Strings and Thick Cement • Perforating for Different Simulations • Perforating in Highly Deviated Wells • Perforating Equipment • Limited Penetration Charges • Pipe Cutoff Methods*
0930 – 0945	*Break*

0945 – 1100	***Formation Damage*** *Quantify Formation Damage • Determination of Flow Efficiency and Skin • Formation Damage Vs. Pseudodamage • Drilling-Induced Formation Damage • Formation Damage Caused by Completion and Workover Fluids • Damage During Perforating and Cementing • Formation Damage Caused by Fines Mitigation • Formation Damage Caused by Swelling Clays • Formation Damage in Injection Wells • Formation Damage Resulting From Paraffins and Asphaltenes • Formation Damage Resulting Form Emulsion and Sludge Formation • Formation Damage Resulting From Condensate Banking • Formation Damage Resulting From Gas Breakout • Formation Damage Resulting From Water Blocks • Formation Damage Resulting for Wettability Alteration • Bacterial Plugging*
1100 – 1230	***Matrix Acidizing*** *Two Basic Acidizing Treatments • Purpose/Applications • Effects of Acidizing: Undamaged Well • Selecting Successful Acidizing Candidates • Production History Plots • Offset Well Comparison • Pressure Buildup Tests • Well Flow Analysis • Formation Damage Diagnosis • Identify Extent/Type of Damage • Damage Removal by Chemical Solvents • Formation Response To Acid • Formation Properties • Formation Matrix Properties • Formation Mineralogy • Methods of Controlling Precipitates • Acid Treatment Design • Matrix Acidizing Deign Guidelines*
1230 – 1245	*Break*
1245 – 1420	***Matrix Acidizing (cont'd)*** *Acid Type and Concentration • Retarded Hf Acids • Geochemical Models • Acid Placements and Coverage • Mechanical Techniques • Particulates • Viscous Acid • Advances in Acid Diversion • Horizontal Wells • Acid Additives • Job Supervision • Safety and Environment Protection • Well Preparation • Quality Control • Injection-Rate Control and Monitoring • Pressure Behavior During Acid Injection • On-Site Evaluation of Acid Treatment Effectiveness • Spent Acid Production Control • Produced Fluid Sampling • Evaluation of Acid Treatments*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Hydraulic Fracturing*** *Fracture Mechanics • Fracture Propagation Models • Fracturing Fluids and Additives • Propping Agents and Fracture Conductivity • Fracture Treatment Design • Acid Fracturing • Fracturing High –Permeability Formations • Fracture Diagnostics • Post-Fracture Well Behavior*
0930 – 0945	*Break*
0945 – 1100	***Well Production Problems*** *Asphaltenes • Waxes • Toxic-Materials Production*
1100 – 1230	***Well Production Problems (cont'd)*** *Hydrates • Water Control*
1230 – 1245	*Break*

1245 – 1420	***Well Production Problems (cont'd)*** *Inorganic –Scale formation • Corrosion*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Artificial Lift Selection*** *Reservoir Pressure and Well Productivity • Reservoir Fluids • Long-Term Reservoir Performance and Facility Constraints • Types of Artificial Lift • Selection Methods • Sample Run-Life Information*
0930 – 0945	*Break*
0945 – 1100	***Gas Lift*** *Designing A Gas Lift System • Compressor Horsepower • Gas Fundamentals • Gas Lift Equipment • Gas Lift Valve Mechanics • Production-Pressure Factor and Valve Spread • Dynamic Gas Lift Valve Performance • Design of Gas Lift Installations • Installation Design Methods • Intermittent-Flow Gas Lift • Operation of Gas Lift Installations • Gas Lift for Unusual Environments*
1100 – 1230	***Electrical Submersible Pumps (ESP)*** *ESP System • ESP System Selection*
1230 – 1245	*Break*
1245 – 1420	***Electrical Submersible Pumps (ESP) (cont'd)*** *Performance Calculations • Problem Solving*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

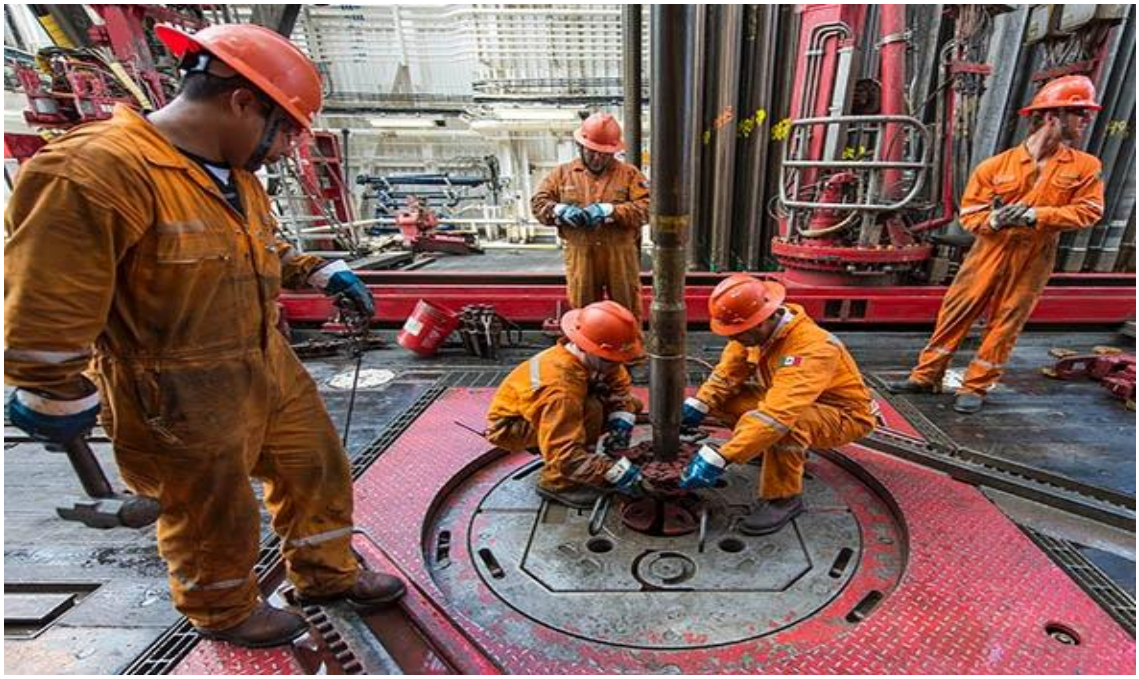
Day 5

0730 – 0930	***Hydraulic Pumping in Oils Wells*** *Downhole Pumps • Principles of Operation • Downhole Pump Accessories • Surface Equipment*
0930 – 0945	*Break*
0945 – 1100	***Progressing Cavity Pumping Systems*** *PCP Lift System Equipment • PCP System Design • Specific Application Considerations • PCP System Installation, Automation, Troubleshooting, and Failure Diagnosis*
1100 – 1245	***Plunger Lift*** *Applications • Design and Models • Basic Foss and Gaul Equations • Equipment Installation and Maintenance • Evaluation and Installation of Downhole Plunger Equipment • Evaluation and Installation of Wellhead and Plunger Surface Equipment • Design Considerations and Plunger Selection • Evaluation of Control Methods • Evaluation and Modification of Production Facilities*

1245 – 1300	*Break*
1300 – 1345	***Open Forum & General Discussion***
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

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