## COURSE OVERVIEW DE0229
# Petrophysics of Unconventional Reservoirs

**Course Title**
Petrophysics of Unconventional Reservoirs


**Course Date/Venue**
Session 1: July 14-18, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: December 21-25, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

**Course Reference**
DE0229

**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 unconventional reservoirs completion and stimulation. It covers the introduction including directional and horizontal drilling, objectives, well geometry; the directional drilling equipment it covers the downhole motors, rotary steerable system, measuring equipment 'MWD'; the drilling consideration of deviated & horizontal wells including the torque and drag, bucking, hole cleaning; the introduction to well and hydraulic fracturing and completion design, operations, equipment; the actual completion trends, stimulation, plug and perf technique, ball and sleeve technique.

Further, this course will also discuss the rock mechanics for fracturing design, in situ stress, fracture orientation and fracture propagation; the fluid leak-off, slurry efficiency, dimensionless fracture conductivity and analyze fracture growth; the hydraulic fracturing models, fracturing fluids, proppants and fracture conductivity; the types of fracturing fluids, types of proppants, fluid and proppant selection; and the equipment and placement techniques, surface pumping equipment and placement techniques in horizontal wells.

During this interactive course, participants will learn the horizontal well objectives in unconventional reservoirs and horizontal well stimulation objectives; the completion planning for horizontal wells, horizontal well risks and risk mitigation strategies; the horizontal well case histories, unconventional resource play completion options and selection processes; and the critical data needs and collection techniques with minimal operational impact, post-job evaluation and environmental considerations of hydraulic fracturing.

**Course Objectives**

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

- Apply and gain an in-depth knowledge on unconventional reservoirs completion and stimulation
- Discuss the introduction including directional and horizontal drilling, objectives, well geometry
- Explain directional drilling equipment it covers the downhole motors, rotary steerable system, measuring equipment 'MWD'
- Discuss drilling consideration of deviated & horizontal wells including the torque and drag, bucking, hole cleaning
- Carryout introduction to well and hydraulic fracturing and completion design, operations, equipment
- Review actual completion trends, stimulation, plug and perf technique, ball and sleeve technique
- Recognize rock mechanics for fracturing design, in situ stress, fracture orientation and fracture propagation
- Discuss fluid leak-off, slurry efficiency, dimensionless fracture conductivity and analyze fracture growth
- Carryout hydraulic fracturing models, fracturing fluids, proppants and fracture conductivity
- Identify the types of fracturing fluids, types of proppants, fluid and proppant selection
- Discuss equipment and placement techniques, surface pumping equipment and placement techniques in horizontal wells
- Explain horizontal well objectives in unconventional reservoirs and horizontal well stimulation objectives
- Define completion planning for horizontal wells, horizontal well risks and risk mitigation strategies
- Explain horizontal well case histories, unconventional resource play completion options and selection processes
- Discuss critical data needs and collection techniques with minimal operational impact, post-job evaluation and environmental considerations of hydraulic fracturing

## 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 a basic overview of all significant aspects and considerations of unconventional reservoirs completion and stimulation for drilling engineers and supervisors, reservoir engineers and supervisors, geologists, production and completion engineers & supervisors.

## 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 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)

Internationally recognized certificates will be issued to all participants of the course.

## 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.

- USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association 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 1-2013 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 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 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.

**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 **30 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 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***

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| *0730 – 0800* | *Registration & Coffee* |
| *0800 – 0815* | *Welcome & Introduction* |
| *0815 – 0830* | ***PRE-TEST*** |
| *0830 – 0930* | ***Introduction***<br>*Directional & Horizontal Drilling, Objectives, Well Geometry* |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Directional Drilling Equipment***<br>*Downhole Motors, Rotary Steerable System, Measuring Equipment 'MWD'* |
| *1100 – 1215* | ***Drilling Consideration of Deviated & Horizontal Wells***<br>*Torque & Drag, Bucking, Hole Cleaning)* |
| *1215 – 1230* | *Break* |
| *1230 – 1420* | ***Introduction to Well Completion & Hydraulic Fracturing*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day One* |

***Day 2***

| | |
|---|---|
| *0730 – 0930* | ***Completion Design, Operations, Equipment*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Actual Completion Trends***<br>*Examples • Technological Challenges (New Techniques)* |
| *1100 – 1215* | ***Stimulation***<br>*Fracturing Techniques & Design (Horizontal Multistaged Hydraulic Fracking Techniques & Operations)* |
| *1215 – 1230* | *Break* |
| *1230 – 1320* | ***Plug & Perf Technique*** |
| *1320 – 1420* | ***Ball & Sleeve Technique*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Two* |

***Day 3***

| | |
|---|---|
| *0730 – 0830* | ***Rock Mechanics for Fracturing Design.*** |
| *0830 – 0930* | ***In Situ Stress, Fracture Orientation & Fracture Propagation*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Fluid Leak-Off, Slurry Efficiency, Dimensionless Fracture Conductivity*** |
| *1100 – 1130* | ***Fracture Growth Analysis*** |
| *1100 – 1130* | ***Hydraulic Fracturing Models*** |
| *1215 – 1230* | *Break* |
| *1230 – 1300* | ***Fracturing Fluids, Proppants & Fracture Conductivity*** |
| *1300 – 1330* | ***Types of Fracturing Fluids*** |
| *1330 – 1400* | ***Types of Proppants*** |
| *1400– 1420* | ***Fluid & Proppant Selection*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Three* |

***Day 4***

| | |
|---|---|
| *0730 – 0930* | ***Equipment & Placement Techniques*** |
| *0930 – 0945* | *Break* |
| *0945 – 1015* | ***Surface Pumping Equipment*** |
| *1015– 1100* | ***Placement Techniques in Horizontal Wells*** |
| *1100 – 1215* | ***Horizontal Well Objectives in Unconventional Reservoirs*** |
| *1215 – 1230* | *Break* |
| *1230 – 1320* | ***Horizontal Well Stimulation Objectives*** |
| *1320 – 1420* | ***Completion Planning for Horizontal Wells*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Four* |

***Day 5***

| | |
|---|---|
| *0730 – 0830* | ***Horizontal Well Risks & Risk Mitigation Strategies*** |
| *0830 – 0930* | ***Horizontal Well Case Histories*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Unconventional Resource Play Completion Options & Selection Processes*** |
| *1100 – 1130* | ***Critical Data Needs & Collection Techniques with Minimal Operational Impact*** |
| *1130 – 1215* | ***Post-Job Evaluation*** |
| *1215 – 1230* | *Break* |
| *1230 – 1345* | ***Environmental Considerations of Hydraulic Fracturing.*** |
| *1345 – 1400* | ***Course Conclusion***<br>*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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