

COURSE OVERVIEW DE0007
Advanced Hydraulic Fracturing

Course Title

Advanced Hydraulic Fracturing

Course Date/Venue

July 27-31, 2026/Al Dhafra Meeting Room,
 Royal Rose Abu Dhabi, a Curio Collection by
 Hilton Affiliated Hotel, Abu Dhabi, UAE

Course Reference

DE0007

Course Duration

Five days/2.75 CEUs/27.5 PDHs



Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.



This advanced course is designed for those who have a practical understanding of the applications of hydraulic fracturing and want to expand their knowledge. The course provides the details and discussion of fracturing concepts usually accepted or assumed in fracturing applications. The strengths and limitations of various approaches to fracturing treatment design are also covered. Attendees should leave the advanced course with a better understanding of the hydraulic fracturing process and how it relates to post-frac well performance, after working on real fracturing cases design and analysis throughout the course.



Further, the course will also discuss the rock properties and fracture mechanics related to the fracturing process; the fracturing fluid mechanics, proppant transport and pre-frac injection test analysis; the fracture closure, fracture monitoring and fracture measurement fluid; the leak-off and re-fracturing considerations; the review of existing fracture modeling software; and the evaluation of post-frac well performance.

During this interactive course, participants will learn the rock mechanics, fracturing fluids, fracture models and software overview; designing hydraulic fracture treatments, proppant transport dynamics and conductivity; the real-time fracture monitoring, fracture geometry and growth; the multi-stage fracturing in horizontal wells and the environmental and regulatory considerations; fracturing in unconventional reservoirs, reservoir modeling and fracture integration; the fracture diagnostics and challenges in complex reservoirs; and evaluating existing fracture models and integration of knowledge.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an advanced knowledge on hydraulic fracturing
- Discuss the hydraulic fracturing, rock mechanics, fracture mechanics and fracturing fluids
- Illustrate proppants and proppant transport, pre-frac injection testing and designing hydraulic fracture treatments
- Explain fluid mechanics in fracturing, proppant transport dynamics, fracture closure and conductivity, fluid leak-off and real-time fracture monitoring
- Discuss fracture geometry and growth including advanced fracturing fluids and technologies
- Identify re-fracturing considerations, multi-stage fracturing in horizontal wells, environmental and regulatory considerations and fracturing in unconventional reservoirs
- Analyze post-frac well performance and incorporate fracture parameters into reservoir models
- Recognize the tools and techniques for diagnosing fracture issues and overcome challenges in high-pressure and high-temperature reservoirs
- Discuss the advances in fracture monitoring technology and economics of hydraulic fracturing
- Evaluate existing fracture models and determine the future trends in 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 an advanced knowledge on hydraulic fracturing for production, operations, completions engineers and those who are actively involved in hydraulic fracturing design, application and analysis.

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

Haward’s 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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 center, 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 **2.75 CEUs** (Continuing Education Units) or **27.5 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:



Mr. Stan Constantino, MSc, BSc, is a **Senior Petroleum & Reservoir Engineer** with over **30 years** of **Offshore & Onshore** extensive experience within the **Oil, Gas & Petroleum** industries. His area of expertise include **Hydraulic Fracturing** Engineering & Design, **Advanced Hydraulic Fracturing** Technologies, Well Stimulation Engineering, **Fracture** Design & Optimization, **Hydraulic Fracturing** Operations, Multi-Stage **Hydraulic Fracturing** for Horizontal Wells, Unconventional Reservoir Stimulation, **Fracture** Propagation Analysis, **Fracture** Pressure Analysis, **Fracture** Diagnostics & Evaluation, **Reserves & Resources**, **Reserves Estimation & Uncertainty**, **Reservoir** Characterization, **Unconventional Resource & Reserves** Evaluation, **Oil & Gas Reserves** Estimation, Methods for **Aggregation of Reserves & Resources**, **Fractured**

Reservoir Classification & Evaluation, **Sequence Stratigraphy**, **Petrophysics & Rock Properties**, **Seismic** Technology, **Geological** Modelling, **Water Saturation**, **Crude Oil & Natural Gas** Demand, **Exploration** Agreements & **Financial** Modelling, **Seismic Survey** Evaluation, **Exploration Well** Identification, **Field** Production Operation, **Field Development** Evaluation, **Crude Oil** Marketing, **Core & Log Data** Integration, **Core Logging**, **Advanced Core & Log** Integration, **Well Logs & Core** Analysis, **Advanced** Petrophysics/Interpretation of **Cased Hole** Logs, **Cased Hole** Formation Evaluation, **Cased Hole** Formation Evaluation, **Cased Hole** Logging, **Applied Production** Logging & **Cased Hole & Production** Log Evaluation, **Cased Hole** Logging & **Formation** Evaluation, **Open & Cased** Hole Logging, **Screening of Oil** Reservoirs for **Enhanced Oil Recovery**, **Enhanced Oil Recovery**, **Enhanced Oil Recovery** Techniques, **Petroleum Economic** Analysis, **Oil Industry** Orientation, **Oil Production & Refining**, **Crude Oil** Market, **Global Oil** Supply & Demand, **Global Oil** Reserves, **Crude Oil** Types & Specifications, **Oil Processing**, **Oil Transportation-Methods**, **Oil & Gas** Exploration and Methods, **Oil & Gas** Extraction, **Technology** Usage in Industrial Security; **Upstream, Midstream & Downstream** Operations; **Oil** Reservoir Evaluation & Estimation, **Oil Supply & Demand**, **Oil Contracts**, **Government Legislation & Oil** Contractual Agreements, **Oil Projects & Their** Feasibility (revenue and profitability), **Water Flooding**, **Reservoir** Sourcing & **Water** Breakthrough, **Reservoir** Performance Using Classical Methods, **Fractured** Reservoir Evaluation & Management, **Reservoir** Surveillance & Management, **Reservoir Engineering** & Simulation, **Reservoir** Monitoring, **Pressure** Transient Testing & **Reservoir** Performance Evaluation, **Reservoir** Characterization, **Reservoir** Engineering Applications with ESP and Heavy Oil, **Reservoir** Volumetrics, **Water Drive** Reservoir, **Reserve** Evaluation, **Rock & Fluid** Properties, **Fluid Flow** Mechanics, **PVT** Analysis, **Material** Balance, **Darcy's Law** & Applications, **Radial Flow**, **Gas Well** Testing, **Natural** Water Influx, **EOR** Methods, **Directional** Drilling, **Drilling** Production & Operations, **Field** Development & Production of Oil & Gas, **Wireline** Logging, **Mud** Logging, **Cased Hole** Logging, **Production** Logging, **Slick Line**, **Coil** Tubing, **Exploration** Wells Evaluation, **Horizontal** Wells, **Well** Surveillance, **Well** Testing, **Design & Analysis**, **Well** Testing & **Oil Well** Performance, **Well** Log Interpretation (WLI), **Formation** Evaluation, **Well** Workover Supervision, **Pressure** Transient Analysis and **Petrophysical** Log Analysis. Currently, he is the **CEO & Managing Director** of **Geo Resources Technology** wherein he is responsible in managing the services and providing technical supports to underground energy related projects concerning **field** development, **production**, **drilling**, **reservoir** engineering and **simulation**.

Throughout his long career life, Mr. Stan has worked for many international companies such as the **Kavala Oil**, **North Aegean Petroleum Company** and **Texaco Inc.**, as the **Managing Director**, **Operations Manager**, **Technical Trainer**, **Training Consultant**, **Petroleum Engineering & Exploration Department Head**, **Assistant Chief Petroleum Engineer**, **Reservoir Engineer**, **Resident Petroleum Engineer**, **Senior Petroleum Engineer** and **Petroleum Engineer** wherein he has been managing the evaluation of exploration wells, reservoir simulation, development training, production monitoring, wireline logging and well testing including selection and field application of well completion methods.

Mr. Stan has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Geology** from the **New Mexico Institute of Mining & Technology (USA)** and from the **Aristotelian University (Greece)** respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership of Management (ILM)** and a member of the Society of Petroleum Engineers, USA (**SPE**), Society of Well Log Professional Analysts, USA (**SPWLA**) and European Association of Petroleum Geoscientists & Engineers (**EAGE**). Moreover, Mr. Stan published numerous scientific and technical papers and delivered various trainings, courses and workshops worldwide.

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.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

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 Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday, 27th of July 2026

0800 – 0830	Registration & Coffee
0830 – 0845	Welcome & Introduction
0845 – 0900	PRE-TEST
0900 – 0930	Overview of Hydraulic Fracturing History & Evolution of Hydraulic Fracturing • Objectives & Applications in Reservoir Engineering • Key Components of a Hydraulic Fracturing Operation • Types of Reservoirs Suitable for Hydraulic Fracturing
0930 – 0945	Break
0945 – 1030	Rock Mechanics & Fracture Mechanics Stress Regimes & their Impact on Fracture Propagation • Rock Mechanical Properties Critical for Fracturing • Fracture Initiation & Propagation Mechanisms • Role of In-Situ Stress in Fracture Geometry

1030 – 1100	Fracturing Fluids <i>Types of Fracturing Fluids: Water-Based, Oil-Based, & Advanced Gels • Rheology of Fracturing Fluids & its Importance • Additives Used in Fracturing Fluids & their Functions • Compatibility of Fluids with Reservoir Rock & Formation Fluids</i>
1100 – 1200	Proppants & Proppant Transport <i>Types of Proppants & their Properties • Transport Mechanisms & Challenges in Proppant Placement • Factors Affecting Proppant Conductivity • Selection Criteria for Proppants Based on Reservoir Conditions</i>
1200 – 1215	Break
1215 – 1300	Pre-Frac Injection Testing <i>Objectives & Benefits of Pre-Frac Injection Tests • Analysis of Pressure Fall-Off Data • Determination of Closure Pressure & Leak-Off Coefficient • Integration of Test Results into Frac Design</i>
1300 – 1350	Fracture Models & Software Overview <i>Introduction to Fracture Modeling Software • Strengths & Limitations of Popular Models • Key Parameters Required for Fracture Modeling • Overview of Software Outputs & Interpretation</i>
1350 – 1400	Recap <i>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</i>
1400	Lunch & End of Day One

Day 2: Tuesday, 28th of July 2026

0800 – 0930	Designing Hydraulic Fracture Treatments <i>Key Considerations in Designing Frac Treatments • Reservoir & Well Parameters Affecting Design • Steps in Creating a Fracture Treatment Plan • Optimization Strategies for Maximum Well Performance</i>
0930 – 0945	Fluid Mechanics in Fracturing <i>Hydraulic Principles of Fluid Movement in Fractures • Impact of Fluid Properties on Fracture Growth • Techniques for Controlling Fluid Loss • Advanced Fluid Placement Strategies</i>
0945 – 1030	Proppant Transport Dynamics <i>Modeling Proppant Transport in Fractures • Role of Fluid Viscosity in Proppant Distribution • Impact of Fracture Geometry on Proppant Placement • Methods to Prevent Proppant Settling</i>
1030 – 1100	Break
1100 – 1200	Fracture Closure & Conductivity <i>Mechanics of Fracture Closure Under Reservoir Pressure • Factors Affecting Long-Term Fracture Conductivity • Measuring & Evaluating Conductivity in the Lab & Field • Strategies to Improve & Sustain Conductivity</i>

1200 – 1215	<i>Break</i>
1215 – 1300	Fluid Leak-Off <i>Mechanisms of Fluid Leak-Off into the Formation • Measurement & Analysis of Leak-Off Coefficients • Impact of Leak-Off on Fracture Geometry & Proppant Placement • Mitigation Techniques to Minimize Fluid Loss</i>
1300 – 1350	Real-Time Fracture Monitoring <i>Techniques for Monitoring Fractures in Real-Time • Microseismic Monitoring & its Applications • Use of Fiber Optics for Fracture Surveillance • Interpreting Real-Time Data to Optimize Frac Treatments</i>
1350 – 1400	Recap <i>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</i>
1400	<i>Lunch & End of Day Two</i>

Day 3: Wednesday, 29th of July 2026

0800 – 0930	Fracture Geometry & Growth <i>Factors Influencing Fracture Geometry • Simulation of Fracture Growth in Complex Reservoirs • Stress Shadowing Effects in Multi-Stage Fracturing • Evaluating Fracture Geometry with Diagnostic Tools</i>
0930 – 0945	<i>Break</i>
0945 – 1030	Advanced Fracturing Fluids & Technologies <i>Latest Advancements in Fracturing Fluid Technology • High-Viscosity Friction Reducers & Energized Fluids • Environmentally Friendly Fluid Formulations • Case Studies of Advanced Fluid Applications</i>
1030 – 1100	Re-Fracturing Considerations <i>Identifying Candidates for Re-Fracturing • Re-Fracturing Design & Execution Strategies • Challenges & Opportunities in Re-Fracturing • Case Studies & Lessons Learned from Re-Fracturing Projects</i>
1100 – 1200	Multi-Stage Fracturing in Horizontal Wells <i>Techniques for Multi-Stage Fracturing • Zonal Isolation Methods: Mechanical versus Chemical • Challenges in Fracturing Long Horizontal Wells • Evaluation of Stage-Wise Performance</i>
1200 – 1215	<i>Break</i>
1215 – 1300	Environmental & Regulatory Considerations <i>Managing Water Resources in Hydraulic Fracturing • Addressing Environmental Concerns & Community Impact • Compliance with Local & International Regulations • Strategies for Reducing the Environmental Footprint</i>
1300 – 1350	Fracturing in Unconventional Reservoirs <i>Unique Challenges of Fracturing Tight Gas & Shale Formations • Adapting Techniques for Unconventional Reservoirs • Impact of Natural Fractures on Hydraulic Fracturing • Case Studies of Successful Fracturing in Unconventional Plays</i>
1350 – 1400	Recap <i>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</i>
1400	<i>Lunch & End of Day Three</i>

Day 4: Thursday, 30th of July 2026

0800 – 0930	Post-Frac Well Performance Analysis Key Indicators of Successful Fracturing • Techniques for Evaluating Post-Frac Well Performance • Integration of Production Data with Fracture Models • Case Studies of Post-Frac Performance Analysis
0930 – 0945	Break
0945 – 1030	Reservoir Modeling & Fracture Integration Incorporating Fracture Parameters into Reservoir Models • Impact of Fractures on Reservoir Performance • Coupled Reservoir & Fracture Simulation Techniques • Applications of Reservoir Modeling in Optimization
1030 – 1100	Fracture Diagnostics Tools & Techniques for Diagnosing Fracture Issues • Evaluating Fracture Geometry & Proppant Placement • Using Tracers & Production Logs for Diagnostics • Case Studies of Diagnostic Applications
1100 – 1200	Challenges in Complex Reservoirs Fracturing in Naturally Fractured Reservoirs • Overcoming Challenges in High-Pressure, High-Temperature Reservoirs • Fracturing Low-Permeability & Heterogeneous Formations • Strategies for Optimizing Treatment in Complex Reservoirs
1200 – 1215	Break
1215 – 1300	Advances in Fracture Monitoring Technology Microseismic & Tilt Mapping Techniques • Distributed Acoustic Sensing (DAS) Applications • Time-Lapse Monitoring of Fracture Performance • Innovations in Downhole Monitoring Tools
1300 – 1350	Economics of Hydraulic Fracturing Cost Estimation for Fracturing Treatments • Economic Evaluation of Frac Job Performance • Optimizing Cost versus Productivity in Frac Design • Case Studies of Cost-Effective Fracturing Projects
1350 – 1400	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
1400	Lunch & End of Day Four

Day 5: Friday, 31st of July 2026

0730 – 0830	Designing Fracture Treatments: Hands-On Workshop Building a Fracture Treatment Plan from Scratch • Incorporating Reservoir & Well Data • Adjusting Designs Based on Real-Time Data • Presenting & Discussing Workshop Results
0830 – 0930	Case Studies of Successful Fracturing Applications Review of Major Fracturing Successes in the Industry • Lessons Learned from High-Profile Projects • Discussion of Innovative Approaches in Challenging Reservoirs • Interactive Discussion & Q&A on Case Studies
0930 – 0945	Break
0945 – 1130	Evaluating Existing Fracture Models Hands-On Analysis Using Fracture Modeling Software • Comparison of Results Across Different Models • Identifying Strengths & Weaknesses in Fracture Models • Recommendations for Improving Model Accuracy




1130 – 1230	Future Trends in Hydraulic Fracturing <i>Emerging Technologies in Fracturing Fluids & Proppants • Innovations in Real-Time Monitoring & Diagnostics • Artificial Intelligence & Machine Learning Applications • Sustainability & the Future of Hydraulic Fracturing</i>
1230 - 1245	Break
1245 – 1315	Integration of Knowledge <i>Recap of Key Concepts from the Course • Group Discussions on Applying Knowledge to Real-World Problems • Addressing Participant-Specific Challenges • Final Q&A Session & Feedback Collection</i>
1315 – 1330	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1330 – 1345	POST-TEST
1345 – 1400	Presentation of Course Certificates
1400	Lunch & End of Course




Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the “PROSPER” simulator.




PROSPER

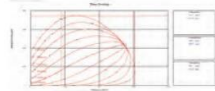


MULTIPHASE WELL AND PIPELINE NODAL ANALYSIS

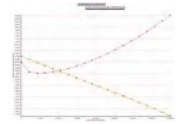
WELL AND PIPELINE MODELS




FULLY COMPOSITIONAL

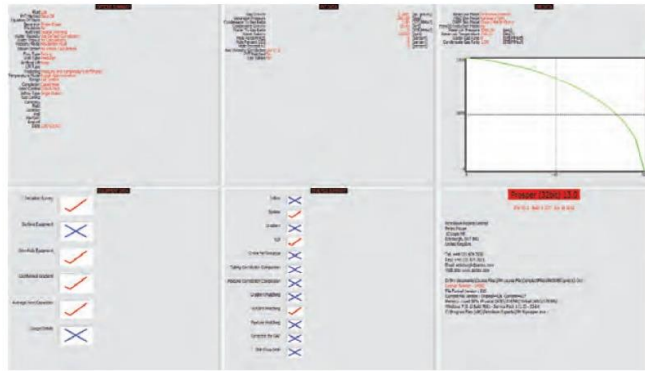


INFLOW/OUTFLOW RESPONSE

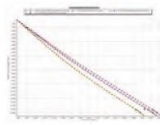


STEAM WELLS







OUTFLOW (VLPs) MODELS



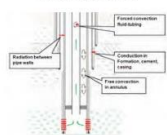
FLOW ASSURANCE



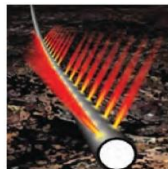
ARTIFICIAL LIFT SYSTEMS




THERMAL MODELLING



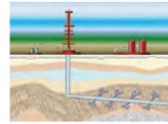
PERFORATION DESIGN AND PERFORMANCE



MULTILATERAL COMPLETIONS



INFLOW (IPRs) MODELS



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org