COURSE OVERVIEW DE0436
Tight Reservoirs Advanced Petrophysical Analysis

Course Title
Tight Reservoirs Advanced Petrophysical Analysis

Course Date/Venue
Session 1: January 12-16, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: July 14-18, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
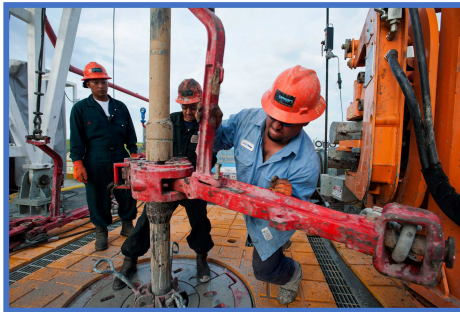
Course Reference
DE0436

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

Course Description

This practical and 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 Tight Reservoirs Advanced Petrophysical Analysis. It covers the significance and challenges associated with tight oil & gas reservoirs in the oil & gas industry; the fundamentals of petrophysics, rock properties and fluid dynamics in tight reservoirs; the log interpretation basics, core analysis and sampling techniques; and the core calibration methods; and advanced logging tools relevant to tight reservoirs.

Further, the course will also discuss the NMR logging in tight reservoirs, microresistivity imaging and sonic and acoustic logging; integrating data from various logging tools to improve reservoir characterization in tight formations; the quantitative log interpretation for tight reservoirs; the petrophysical model building; the pore network modeling in tight reservoirs; the fracture characterization and modelling; the saturation height modelling; and integrating the petrophysical models with geological models for a holistic reservoir characterization.

During this interactive course, participants will learn the effective workflows for comprehensive reservoir characterization in tight formations; the capillary pressure analysis and saturation modeling techniques; the permeability estimation, special core analysis (SCAL) and gas adsorption analysis; integrating reservoir characterization and the reservoir simulation and modelling; utilizing the petrophysical analysis to inform optimal field development and well placement strategies; exploring how petrophysical insights can guide production optimization and enhanced oil recovery techniques; and the current challenges and future trends in petrophysical analysis of tight reservoirs including technological advancements.

Course Objectives

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

- Apply and gain an in-depth knowledge on tight reservoirs advanced petrophysical analysis

- Discuss the significance and challenges associated with tight oil and gas reservoirs in the oil & gas industry

- Explain the fundamentals of petrophysics, rock properties and fluid dynamics in tight reservoirs and log interpretation basics

- Carryout core analysis and sampling techniques including core calibration methods and identify advanced logging tools relevant to tight reservoirs

- Recognize NMR logging in tight reservoirs, microresistivity imaging and sonic and acoustic logging

- Apply techniques for integrating data from various logging tools to improve reservoir characterization in tight formations

- Carryout quantitative log interpretation for tight reservoirs and illustrate petrophysical model building, pore network modeling in tight reservoirs, fracture characterization and modeling and saturation height modeling

- Integrate petrophysical models with geological models for a holistic reservoir characterization

- Develop effective workflows for comprehensive reservoir characterization in tight formations

- Employ capillary pressure analysis, saturation modeling techniques, permeability estimation in tight reservoirs and special core analysis (SCAL) in tight reservoirs

- Apply gas adsorption analysis, integrated reservoir characterization and reservoir simulation & modelling

- Utilize petrophysical analysis to inform optimal field development and well placement strategies

- Explore how petrophysical insights can guide production optimization and enhanced oil recovery techniques

- Discuss the current challenges and future trends in petrophysical analysis of tight reservoirs including technological advancements

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 carbonate reservoir characterization for petroleum engineers, geologists, petrophysicists, geophysicists, exploration and development geologists and managers.

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 completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- **BAC** 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.

- **IACET** 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.

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. 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 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 – 0915	***Overview of Tight Reservoirs:*** *Definition, Significance, & Challenges Associated with Tight Oil & Gas Reservoirs in the Oil & Gas Industry*
0915 – 0930	*Break*
0930 – 1030	***Fundamentals of Petrophysics:*** *Introduction to Core Petrophysical Concepts, including Porosity, Permeability, Saturation & Wettability & their Relevance to Tight Reservoirs*
1030 – 1130	***Rock Properties & Fluid Dynamics in Tight Reservoirs:*** *The Unique Rock Properties & Fluid Dynamics within Tight Formations, including Nano-Darcy Permeability & Capillary Pressures*
1130 – 1230	***Log Interpretation Basics:*** *Overview of Log Interpretation in Tight Reservoirs, Highlighting the Differences from Conventional Reservoirs*
1230 – 1245	*Break*
1245 – 1330	***Core Analysis & Sampling:*** *Techniques for Core Sampling & Analysis Specifically Tailored for Tight Reservoirs, including Core Calibration Methods*
1330 – 1420	***Introduction to Advanced Logging Tools:*** *An Overview of Advanced Logging Tools Relevant to Tight Reservoirs, including Microresistivity, Nuclear Magnetic Resonance (NMR) & Acoustic Logs*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***NMR Logging in Tight Reservoirs:*** *Detailed Exploration of NMR Logging Applications for Porosity, Permeability Estimation & Fluid Typing in Tight Formations*
0830 – 0930	***Microresistivity Imaging:*** *Utilizing Microresistivity Imaging Logs for Detailed Reservoir Characterization, including Fracture Detection & Analysis*
0930– 0945	*Break*
0945 – 1100	***Sonic & Acoustic Logging:*** *Interpretation of Sonic & Acoustic Logs for Mechanical Properties & their Application in Fracture Characterization*
1100 – 1200	***Integration of Log Data:*** *Techniques for Integrating Data from Various Logging Tools to Improve Reservoir Characterization in Tight Formations*
1200 – 1215	*Lunch*
1215 – 1330	***Quantitative Log Interpretation for Tight Reservoirs:*** *Advanced Methodologies for Quantitative Log Interpretation, including the Use of Machine Learning & AI*
1330 – 1420	***Case Studies in Log Analysis:*** *Examination of Case Studies Demonstrating Successful Log Analysis & Interpretation in Tight Reservoirs*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	**Petrophysical Model Building:** *Building Accurate Petrophysical Models for Tight Reservoirs, Incorporating Log Data, Core Data & Seismic Attributes*
0830 – 0930	**Pore Network Modeling in Tight Reservoirs:** *Techniques for Modeling Pore Networks in Tight Formations to Understand Flow Paths & Storage Capacity*
0930 – 0945	*Break*
0945 – 1100	**Fracture Characterization & Modeling:** *Advanced Methods for Characterizing & Modeling Natural Fractures & their Impact on Reservoir Behavior*
1100 – 1200	**Saturation Height Modeling:** *Understanding & Applying Saturation Height Models in Tight Reservoirs to Estimate Fluid Distributions Accurately*
1200 – 1215	*Break*
1215 – 1330	**Integrating Petrophysical Models with Geological Models**: *Techniques for Integrating Petrophysical Models with Geological Models for a Holistic Reservoir Characterization*
1330 – 1420	**Workflows for Reservoir Characterization:** *Developing Effective Workflows for Comprehensive Reservoir Characterization in Tight Formations*
1420 – 1430	**Recap**
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	**Capillary Pressure Analysis**: *Advanced Analysis of Capillary Pressure Data for Pore Throat Characterization & Fluid Distribution Understanding in Tight Reservoirs*
0830 – 0930	**Saturation Modeling Techniques:** *Detailed Exploration of Advanced Techniques for Fluid Saturation Modeling, Including Dielectric Logging & Spectral Induced Polarization*
0930 – 0945	*Break*
0945 – 1100	**Permeability Estimation in Tight Reservoirs:** *Innovative Approaches for Permeability Estimation, including Empirical Models, Analytical Methods & Machine Learning Predictions*
1100 – 1200	**Special Core Analysis (SCAL) in Tight Reservoirs:** *Application of SCAL Data for Enhanced Understanding of Fluid Flow, Wettability & Capillary Pressure in Tight Formations*
1200 – 1215	*Break*
1215 - 1330	**Gas Adsorption Analysis:** *Understanding the Role of Gas Adsorption in Tight Shale Reservoirs & its Impact on Gas in Place & Recoverable Volumes*
1330 – 1420	**Case Studies on Saturation & Permeability Estimation**: *Review of Case Studies Highlighting Innovative Techniques for Saturation & Permeability Estimation in Tight Reservoirs*
1420 – 1430	**Recap**
1430	*Lunch & End of Day Four*

Day 5

0730 - 0830	**Integrated Reservoir Characterization:** *Strategies for Integrating Petrophysical Analysis with Geological, Geophysical & Engineering Data for Enhanced Reservoir Characterization*
0830 – 0930	**Reservoir Simulation & Modeling:** *Application of Advanced Petrophysical Analysis in Reservoir Simulation Models to Improve Prediction Accuracy in Tight Reservoirs*

0930 – 0945	*Break*
0945 – 1100	***Field Development Strategies for Tight Reservoirs:*** *Utilizing Petrophysical Analysis to Inform Optimal Field Development & Well Placement Strategies*
1100 – 1200	***Production Optimization & EOR in Tight Reservoirs:*** *Exploring How Petrophysical Insights can Guide Production Optimization & Enhanced Oil Recovery Techniques*
1200 – 1215	*Break*
1215 - 1300	***Challenges & Future Directions in Tight Reservoir Petrophysics:*** *Discussion on the Current Challenges & Future Trends in Petrophysical Analysis of Tight Reservoirs, Including Technological Advancements*
1300 - 1345	***Interactive Workshop:*** *Participants Engage in an Interactive Workshop to Apply the Concepts Learned Through a Comprehensive Case Study, Integrating Petrophysical Analysis with Reservoir Management Strategies for a Tight Reservoir*
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

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