COURSE OVERVIEW DE0297
Fault Seal Analysis in Exploration & Development: Theory & Application

Course Title
Fault Seal Analysis in Exploration & Development: Theory & Application

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
DE0297

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 Exploration Blocks Evaluation and Uncertainty Analysis. It covers the types of exploration blocks including the significance in oil and gas exploration and geographical and regulatory considerations; the basic geological concepts relevant to exploration, creating geological models and using seismic data in modeling; the probabilistic and deterministic approaches in exploration; the common uncertainties in geological exploration; and the petroleum system analysis covering source, reservoir, seal, and trap evaluation, migration pathways and temporal and spatial modeling.

Further, the course will also discuss the probabilistic and deterministic approaches in exploration; the common uncertainties in geological exploration; the petroleum system analysis covering source, reservoir, seal, and trap evaluation, migration pathways and temporal and spatial modeling; the technologies used in exploration including remote sensing, seismic surveys, drilling technologies and advances in technology and emerging tools; the methods of data collection, data quality control and management, integration, and storage of exploration data; and the resource estimation and economic evaluation, technical and commercial feasibility and decision analysis in exploration.

During this interactive course, participants will learn the monte carlo simulation, sensitivity analysis and scenario planning; the risk management strategies covering identification, assessment, and mitigation of risks, risk matrices and risk management plans and strategic risk management in exploration; the geo-statistical methods in exploration, spatial statistics and variograms, kriging and other interpolation techniques and uncertainty quantification in geo-statistical modeling; the decision tree analysis, real option valuation in exploration and strategic alignment with business objectives; the environmental impact assessments, social responsibility in exploration and regulatory compliance and best practices; the advanced seismic interpretation techniques, multi-attribute analysis, time-lapse (4D) seismic and AVO (amplitude versus offset) analysis; the unconventional resources exploration; and the robust field development plans, exploration, portfolio management, and machine learning and AI in flexibility and adaptability in planning and balancing economic objectives with uncertainty.

Course Objectives

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

- Apply and gain an in-depth knowledge on exploration blocks evaluation and uncertainty analysis
- Identify the types of exploration blocks including the significance in oil and gas exploration and geographical and regulatory considerations
- Recognize the basic geological concepts relevant to exploration, create geological models and use seismic data in modeling
- Describe the probabilistic and deterministic approaches in exploration and the common uncertainties in geological exploration
- Carryout petroleum system analysis covering source, reservoir, seal, and trap evaluation, migration pathways and temporal and spatial modeling
- Review technologies used in exploration including remote sensing, seismic surveys, drilling technologies and advances in technology and emerging tools
- Apply methods of data collection, data quality control and management, integration, and storage of exploration data
- Employ resource estimation and economic evaluation, technical and commercial feasibility and decision analysis in exploration
- Illustrate monte carlo simulation, sensitivity analysis and scenario planning
- Implement risk management strategies covering identification, assessment, and mitigation of risks, risk matrices and risk management plans and strategic risk management in exploration
- Apply geo-statistical methods in exploration, spatial statistics and variograms, kriging and other interpolation techniques and uncertainty quantification in geo-statistical modeling
- Carryout decision tree analysis, real option valuation in exploration and strategic alignment with business objectives
- Employ environmental impact assessments, social responsibility in exploration and regulatory compliance and best practices
- Apply advanced seismic interpretation techniques, multi-attribute analysis, time-lapse (4D) seismic and AVO (amplitude versus offset) analysis

- Carryout unconventional resources exploration, portfolio management, and machine learning and AI in exploration

- Develop robust field development plans, flexibility and adaptability in planning and balancing economic objectives with uncertainty

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 exploration blocks evaluation and uncertainty analysis for geological exploration professionals, petroleum engineers, decision-makers in the oil and gas industry, geologists, geoscientists, mining engineers, resource exploration technical staff, financial analysts, data analysts and modelers.

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 book.

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.

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: -

- 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.

- 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 – 0930	**Introduction to Exploration Blocks** *Definition & Types of Exploration Blocks • The Significance in Oil & Gas Exploration*
0930 - 0945	*Break*
0945 - 1100	**Introduction to Exploration Blocks (Cont'd)** *Geographical & Regulatory Considerations*
1100 - 1200	**Geological Structures & Modeling** *Basic Geological Concepts Relevant to Exploration • Creation of Geological Models • Use of Seismic Data in Modeling*
1200 - 1215	*Break*
1215 - 1420	**Risk & Uncertainty in Exploration** *Understanding Risk vs. Uncertainty • Probabilistic & Deterministic Approaches • Common Uncertainties in Geological Exploration*
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	*End of Day One*

Day 2

0730 – 0900	**Petroleum System Analysis** *Source, Reservoir, Seal & Trap Evaluation • Migration Pathways*
0900 – 0915	*Break*
0915 – 1100	**Petroleum System Analysis (Cont'd)** *Temporal & Spatial Modeling*
1100 – 1230	**Exploration Technology Overview** *Review of Technologies Used in Exploration • Remote Sensing, Seismic Surveys & Drilling Technologies • Advances in Technology & Emerging Tools*
1230 – 1245	*Break*
1245 – 1420	**Data Collection & Management** *Methods of Data Collection in the Field • Data Quality Control • Management, Integration & Storage of Exploration Data*
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	*End of Day Two*

Day 3

0730 – 0900	**Exploration Blocks Evaluation** *Resource Estimation & Economic Evaluation • Technical & Commercial Feasibility • Decision Analysis in Exploration*
0900 – 0915	*Break*
0915 – 1100	**Uncertainty Analysis Methods** *Monte Carlo Simulation • Sensitivity Analysis • Scenario Planning*
1100 – 1230	**Risk Management Strategies** *Identification, Assessment & Mitigation of Risks • Risk Matrices & Risk Management Plans • Strategic Risk Management in Exploration*
1230 – 1245	*Break*
1245 – 1420	**Geo-Statistical Methods in Exploration** *Spatial Statistics & Variograms • Kriging & Other Interpolation Techniques • Uncertainty Quantification in Geo-Statistical Modeling*
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	*End of Day Three*

Day 4

0730 – 0900	**Exploration Decision Making** *Decision Tree Analysis • Real Option Valuation in Exploration • Strategic Alignment with Business Objectives*
0900 – 0915	*Break*
0915 – 1100	**Environmental & Social Considerations** *Environmental Impact Assessments • Social Responsibility in Exploration • Regulatory Compliance & Best Practices*
1100 – 1230	**Advanced Seismic Interpretation Techniques** *Multi-Attribute Analysis • Time-Lapse (4D) Seismic • AVO (Amplitude Versus Offset) Analysis*
1230 – 1245	*Break*
1245 – 1420	**Unconventional Resources Exploration** *Shale Gas, Tight Oil & Other Unconventional Resources • Evaluation Techniques & Challenges • Economic Considerations*
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	*End of Day Four*

Day 5

0730 – 0900	**Portfolio Management in Exploration** *Exploration Project Portfolio Optimization • Risk & Return Trade-Offs • Strategic Planning in Portfolio Management*
0900 – 0915	*Break*
0915 – 1100	**Machine Learning & AI in Exploration** *Application of AI & Machine Learning • Predictive Analytics • Case Studies & Practical Applications*

1100 – 1200	*Integrating Uncertainty into Development Plans* *Developing Robust Field Development Plans • Flexibility & Adaptability in Planning • Balancing Economic Objectives with Uncertainty*
1200 - 1215	*Break*
1215 – 1345	*Workshop & Case Studies* *Hands-on Exercises Using Real-World Examples • Team-Based Project Work • Review, Discussion & Reflection on Case Studies*
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	*End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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