**COURSE OVERVIEW DE0051**
**Petrel Geophysics: Advanced and Practical Seismic Attributes**

**Course Title**
Petrel Geophysics: Advanced and Practical Seismic Attributes



**Course Date/Venue**
Session 1: February 09-13, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: August 11-15, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
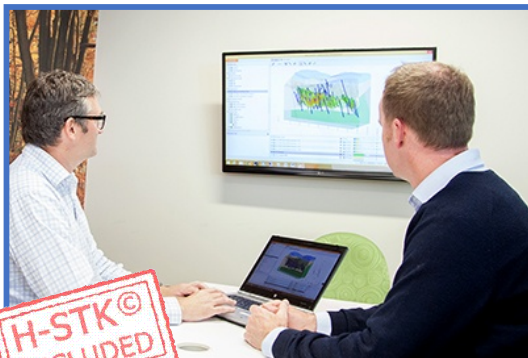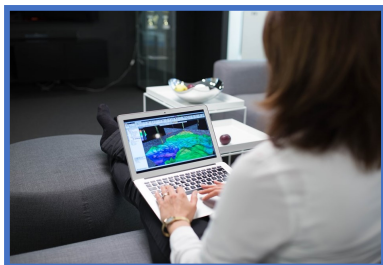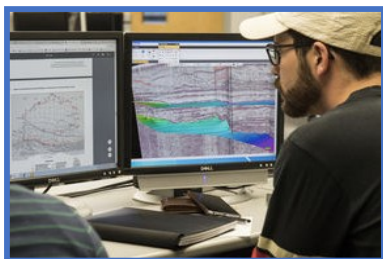
**Course Reference**
DE0051

**Course Duration/Credits**
Five days/3.0 CEUs/30 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 course is designed to provide participants with a detailed and up-to-date overview of Petrel Fundamentals and Geophysics. It covers the Petrel and the exploration workflow including its role in exploration and production; the Petrel user interface and workflows, seismic data processing and interpretation and seismic inversion and velocity modeling; the seismic reservoir characterization and workflows for integrating seismic data with other subsurface data; and the well log data processing and interpretation including log normalization, log scaling, and log correlation.



During this interactive course, participants will learn the well log interpretation workflows, seismic-well ties and structural modeling; the techniques for tying seismic data to well log data in Petrel, cross-plot analysis, horizon-based ties, and seismic-to-well ties; the structural modeling workflows, fault modeling and horizon modeling; and the techniques for building reservoir models in Petrel, including grid generation, property modeling, and well modeling.

## Course Objectives

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

• Apply and gain a fundamental knowledge on Petrel and geophysics

• Discuss Petrel and the exploration workflow including its role in exploration and production

• Identify Petrel user interface and workflows and illustrate seismic data processing and interpretation and seismic inversion and velocity modeling

• Describe seismic reservoir characterization and recognize workflows for integrating seismic data with other subsurface data

• Apply well log data processing and interpretation including log normalization, log scaling, and log correlation

• Illustrate well log interpretation workflows, seismic-well ties and structural modeling

• Employ techniques for tying seismic data to well log data in Petrel, including cross-plot analysis, horizon-based ties, and seismic-to-well ties

• Recognize structural modeling workflows, including fault modeling and horizon modeling

• Apply techniques for building reservoir models in Petrel, including grid generation, property modeling, and well modeling

## 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 Petrel fundamentals and geophysics for geologists, geophysicists, petrophysicists, reservoir engineers, production engineers, drilling engineers and technical support staff who work with geoscientists and engineers.

## 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 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.

## Accommodation

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

## 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 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:

**Ms. Diana Helmy**, PgDip, MSc, BSc, is a **Senior Petroleum & Geologist** with extensive years of experience within the **Oil & Gas**, **Refinery** and **Petrochemical** industries. Her expertise widely covers in the areas of **Tubular & Pipe** Handling, **Tubular Strength**, **Casing & Tubing** Design, **Production/Injection Loads** for Casing Strings & Tubing, **Drilling** Loads, **Drilling & Production Thermal** Loads, **Well** Architecture, **Wellhead Integrity**, **Well Integrity & Artificial Lift**, **Well Integrity** Management, **Well** Completion & Workover, Applied **Drilling** Practices, Horizontal **Drilling**, **Petroleum** Production, **Resource & Reserve Evaluation**, **Reserves Estimation & Uncertainty**, Methods for **Aggregation of Reserves & Resources**, **Horizontal & Multilateral Wells**, **Well Completion & Stimulation**, **Artificial Lift System Selection & Design**, **Well** Testing & Oil Well Performance, **Well** Test Design Analysis, **Well Test** Operations, **Well Testing & Perforation**, **Directional** Drilling, **Formation Damage** Evaluation & Preventive, **Formation Damage** Remediation, **Drilling & Formation Damage**, Simulation Program for The **International Petroleum Business**, **Well** Testing & Analysis, **Horizontal & Multilateral Wells & Reservoir** Concerns, **Oil & Gas Analytics**, **Petrophysics & Reservoir Engineering**, **Subsurface Geology & Logging** Interpretation, **Petroleum Geology**, **Geophysics**, **Seismic** Processing & Exploration, **Seismic** Interpretation, **Sedimentology**, **Stratigraphy & Biostratigraphy**, **Petroleum Economy**, **Core** Analysis, Well Logging Interpretation, **Core Lab Analysis** & **SCAL**, **Sedimentary Rocks**, **Rock** Types, Core & Ditch Cuttings Analysis, Clastic, Carbonate & Basement Rocks, **Stratigraphic Sequences**, **Petrographically** Analysis, Thin Section Analysis, Scanning Electron Microscope (**SEM**), X-ray Diffraction (**XRD**), Cross-Section Tomography (**CT**), **Conventional & Unconventional** Analysis, **Porosity & Permeability**, **Geological & Geophysical** Model, **Sedimentary** Facies, **Formation Damage** Studies & Analysis, **Rig** Awareness, 2D&3D **Seismic** Data Processing, Static & Dynamic Correction, Noise Attenuation & Multiple Elimination Techniques, Velocity Analysis & Modeling and various software such as Petrel, OMEGA, LINUX, Kingdom and Vista. She is currently a **Senior Consultant** wherein she is responsible in different facets of **Petroleum & Process Engineering** from managing **asset integrity**, **well integrity process**, **pre-commissioning/commissioning** and **start up** onshore & offshore process facilities.

During her career life, Ms. Diana worked as a **Reservoir Geologist**, **Seismic Engineer**, **Geology Instructor**, **Geoscience Instructor & Consultant** and **Petroleum Geology Researcher** from various international companies like the **Schlumberger**, Corex Services for Petroleum Services, Petrolia Energy Supplies and Alexandria University.

Ms. Diana has a **Postgraduate Diploma** in **Geophysics**, **Master's** degree in **Petroleum Geology** and **Geophysics** and a **Bachelor's** degree in **Geology**. Further, she is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous trainings, courses, workshops, 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 to Petrel & the Exploration Workflow** |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | **Petrel & Its Role in Exploration & Production** |
| 1100 – 1230 | **The Exploration Workflow & How Petrel Fits into the Workflow** |
| 1230 – 1245 | *Break* |
| 1245 – 1330 | **The Petrel User Interface & Workflows** |
| 1330 – 1420 | **Seismic Data Processing & Interpretation** |
| 1420 – 1430 | **Recap** |
| 1430 | *Lunch & End of Day One* |

### Day 2

| | |
|---|---|
| 0730 – 0930 | **Techniques for Processing Seismic Data in Petrel, including Wavelet Analysis, Trace Normalization, & Trace Balancing** |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | **Seismic Interpretation Workflows, including Horizon Picking & Attribute Analysis** |
| 1100 – 1230 | **Seismic Inversion & Velocity Modeling** |
| 1230 – 1245 | *Break* |
| 1245 – 1330 | **Techniques for Performing Seismic Inversion in Petrel, including Deterministic Inversion & Stochastic Inversion** |
| 1330 – 1420 | **Velocity Modeling Workflows, including Time-To-Depth Conversion & Velocity Analysis** |
| 1420 – 1430 | **Recap** |
| 1430 | *Lunch & End of Day Two* |

### Day 3

| | |
|---|---|
| 0730 – 0930 | **Seismic Reservoir Characterization** |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | **Techniques for Using Seismic Data to Characterize Reservoirs in Petrel, including Seismic Facies Analysis, Seismic Attribute Analysis, & Rock Property Analysis** |
| 1100 – 1230 | **Workflows for Integrating Seismic Data with Other Subsurface Data, including Well Log Data & Geological Models** |
| 1230 – 1245 | *Break* |
| 1230 – 1330 | **Well Log Data Processing & Interpretation** |
| 1330 – 1420 | **Techniques for Processing Well Log Data in Petrel, including Log Normalization, Log Scaling, & Log Correlation** |
| 1420 – 1430 | **Recap** |
| 1430 | *Lunch & End of Day Three* |

**Day 4**

| 0730 – 0930 | *Well Log Interpretation Workflows, including Petrophysical Analysis & Rock Property Analysis* |
|---|---|
| 0930 – 0945 | *Break* |
| 0945 – 1100 | *Seismic-Well Ties & Structural Modeling* |
| 1100 – 1230 | *Techniques for Tying Seismic Data to Well Log Data in Petrel, including Cross-Plot Analysis, Horizon-Based Ties, & Seismic-To-Well Ties* |
| 1230 – 1245 | *Break* |
| 1230 – 1420 | *Structural Modeling Workflows, including Fault Modeling & Horizon Modeling* |
| 1420 – 1430 | *Recap* |
| 1430 | *Lunch & End of Day Four* |

**Day 5**

| 0730 – 0930 | *Reservoir Modeling & Simulation* |
|---|---|
| 0930 – 0945 | *Break* |
| 0945 – 1100 | *Techniques for Building Reservoir Models in Petrel, including Grid Generation, Property Modeling, & Well Modeling* |
| 1100 – 1230 | *Reservoir Simulation Workflows, including Fluid Flow Simulation & Production Optimization* |
| 1230 – 1245 | *Break* |
| 1230 – 1300 | *Group Project & Presentations*<br>*Group Project on Reservoir Characterization Using Petrel & Geophysical Data • Presentation & Discussion of Group Project Results • Review of Best Practices & Tips for Successful Reservoir Characterization and Geophysics, including Seismic Data Processing, Well Log Data Processing, & Seismic-Well Ties* |
| 1300 – 1345 | *Conclusion & Future Directions*<br>*Future Directions in Geophysics & Exploration • Emerging Technologies & Methodologies, including Cloud Computing, High-Performance Computing, & Workflows for Data-Driven Exploration* |
| 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* |

**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 "Petrel" software.
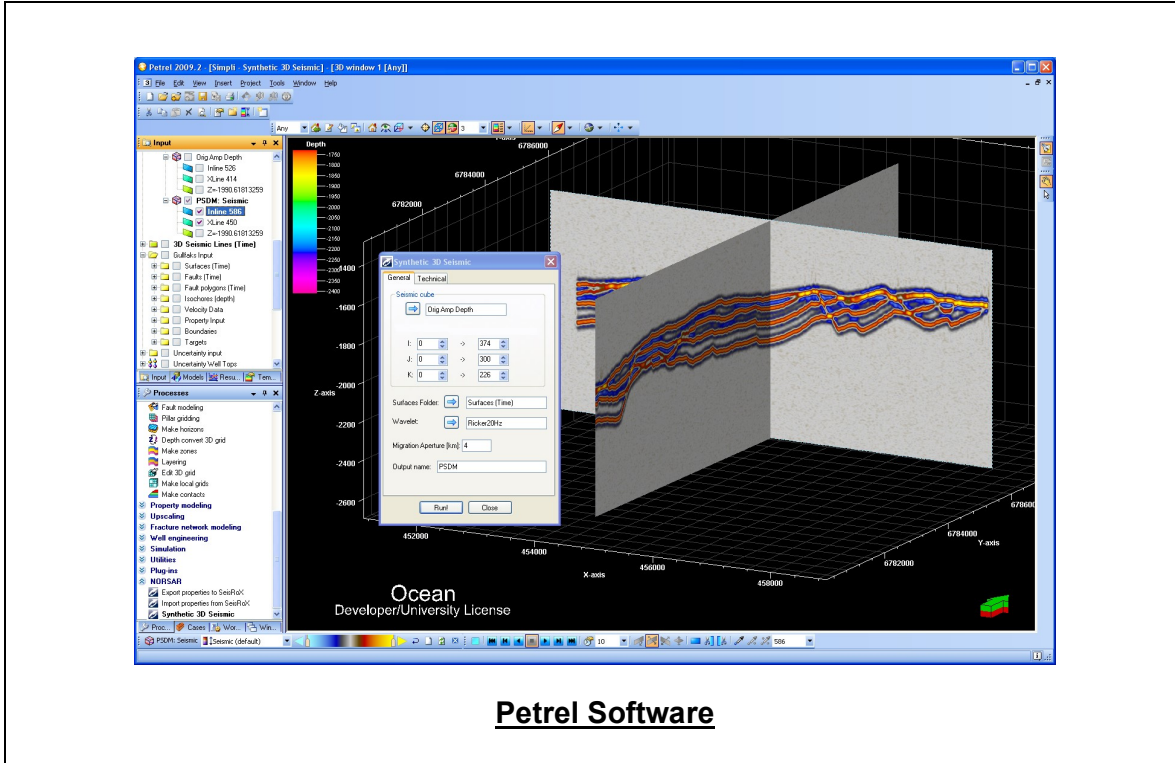


**Petrel Software**

**Course Coordinator**
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