Haward Technology Middle East

COURSE OVERVIEW DE0053
Petrel Geological Process Modelling

Course Title
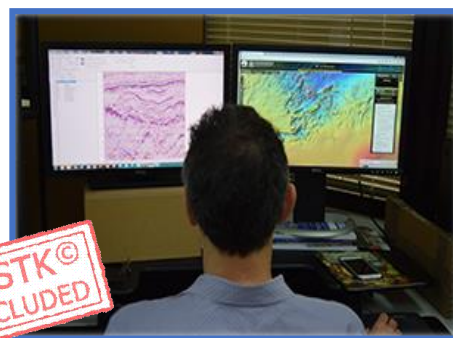Petrel Geological Process Modelling

Course Reference
DE0053

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

Course Date/Venue

Session(s)	Date	Venue
1	October 28-November 01, 2024	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	November 10-14, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

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.
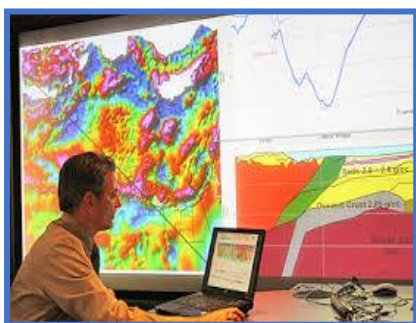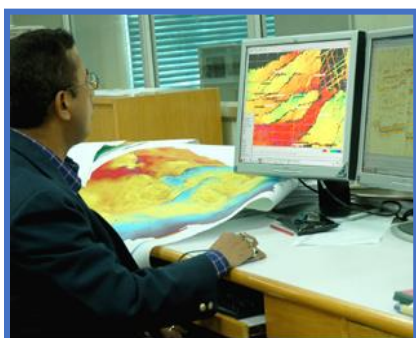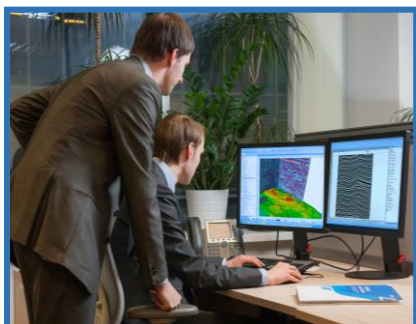
This course is designed to provide participants with a detailed and up-to-date overview of Petrel Geological Process Modeling. It covers the capabilities of Petrel software; the user interface and basic navigation and creating a new project and importing data; the well data and log interpretation, importing and interpreting well data, creating synthetic well logs and correlating well data to build a stratigraphic framework; and importing and interpreting seismic data, creating seismic horizons and faults and building a 3D geological model from seismic data.

Further, the course will also discuss the structural modeling, creating fault models, building a 3D structural model and analyzing the structural model for potential drilling targets; the reservoir modeling, reservoir properties and their impact on production; building a reservoir model from well and seismic data; performing petrophysical analysis to estimate reservoir properties; the geological process modeling in Petrel; and the impact of geological processes on reservoir behavior.

During this interactive course, participants will learn the simulations on the geological process model,

analyzing simulation results and creating production forecasts and economic analysis; the history matching on the geological process model and uncertainty and sensitivity analysis; the enhanced oil recovery techniques; modeling and simulating enhanced oil recovery methods in Petrel; analyzing the impact of enhanced oil recovery on reservoir performance; the optimization and field development planning; creating optimization scenarios in Petrel; and building a comprehensive field development plan using Petrel's optimization tools.

Course Objectives

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

- Apply and gain an in-depth knowledge on Petrel geological process modeling

- Discuss the capabilities of Petrel software, user interface and basic navigation as well as create a new project and import data

- Carryout well data and log interpretation, import and interpret well data, create synthetic well logs and correlate well data to build a stratigraphic framework

- Import and interpret seismic data, create seismic horizons and faults and build a 3D geological model from seismic data

- Develop structural modeling, create fault models, build a 3D structural model and analyze the structural model for potential drilling targets

- Illustrate reservoir modeling and identify reservoir properties and their impact on production

- Build a reservoir model from well and seismic data and perform petrophysical analysis to estimate reservoir properties

- Illustrate geological process modeling in Petrel and identify the impact of geological processes on reservoir behavior

- Run simulations on the geological process model, analyze simulation results and create production forecasts and economic analysis

- Explain history matching and uncertainty analysis, perform history matching on the geological process model and discuss uncertainty and sensitivity analysis

- Apply enhanced oil recovery techniques as well as modeling and simulating enhanced oil recovery methods in Petrel and analyze the impact of enhanced oil recovery on reservoir performance

- Carryout optimization and field development planning, create optimization scenarios in Petrel and build a comprehensive field development plan using Petrel's optimization tools

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of petrel geological process modeling for geologists, geophysicists, reservoir engineers, and other professionals involved in oil and gas exploration and production. Specifically, the course is suitable for those who need to create, modify, and validate 3D geological models and conduct simulations of geological processes in the petrel software platform.

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: -

- **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.

- **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.

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 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 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 Petrel*** *Petrel Software & Its Capabilities ● User Interface & Basic Navigation ● Creating a New Project & Importing Data*
0930 – 0945	*Break*
0945 – 1115	***Well Data & Log Interpretation*** *Importing & Interpreting Well Data*
1115 – 1215	***Well Data & Log Interpretation (cont'd)*** *Creating Synthetic Well Logs*
1215 – 1230	*Break*
1230 – 1420	***Well Data & Log Interpretation (cont'd)*** *Correlating Well Data to Build a Stratigraphic Framework*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Seismic Interpretation*** *Importing & Interpreting Seismic Data ● Creating Seismic Horizons & Faults*
0930 – 0945	*Break*
0945 – 1100	***Seismic Interpretation (cont'd)*** *Building a 3D Geological Model from Seismic Data*
1100 – 1230	***Structural Modeling*** *Creating Fault Models ● Building a 3D Structural Model*
1230 – 1245	*Break*
1245 – 1420	***Structural Modeling (cont'd)*** *Analyzing the Structural Model for Potential Drilling Targets*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Reservoir Modeling*** *Reservoir Properties & Their Impact on Production ● Building a Reservoir Model from Well & Seismic Data*
0930 – 0945	*Break*

| 0945 – 1100	**Reservoir Modeling (cont'd)** *Performing Petrophysical Analysis to Estimate Reservoir Properties*
1100 – 1230	**Geological Process Modeling** *Geological Process Modeling in Petrel ● Building a Geological Process Model Using the Dynamic Reservoir Simulator*
1230 – 1245	*Break*
1245 – 1420	**Geological Process Modeling (cont'd)** *The Impact of Geological Processes on Reservoir Behavior*
1420 – 1430	**Recap**
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	**Simulation & Analysis** *Running Simulations on the Geological Process Model*
0930 – 0945	*Break*
0945 – 1100	**Simulation & Analysis (cont'd)** *Analyzing Simulation Results ● Creating Production Forecasts & Economic Analysis*
1100 – 1230	**History Matching & Uncertainty Analysis** *History Matching ● Performing History Matching on the Geological Process Model*
1230 – 1245	*Break*
1245 – 1420	**History Matching & Uncertainty Analysis (cont'd)** *Uncertainty & Sensitivity Analysis*
1420 – 1430	**Recap**
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	**Enhanced Oil Recovery Techniques** *Modeling & Simulating Enhanced Oil Recovery Methods in Petrel*
0930 – 0945	*Break*
0945 – 1100	**Enhanced Oil Recovery Techniques (cont'd)** *Analyzing the Impact of Enhanced Oil Recovery on Reservoir Performance*
1100 – 1245	**Optimization & Field Development Planning** *Creating Optimization Scenarios in Petrel*
1245 – 1300	*Break*
1300 – 1345	**Optimization & Field Development Planning (cont'd)** *Building a Comprehensive Field Development Plan Using Petrel's Optimization Tools*
1345 – 1400	**Course Conclusion**
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
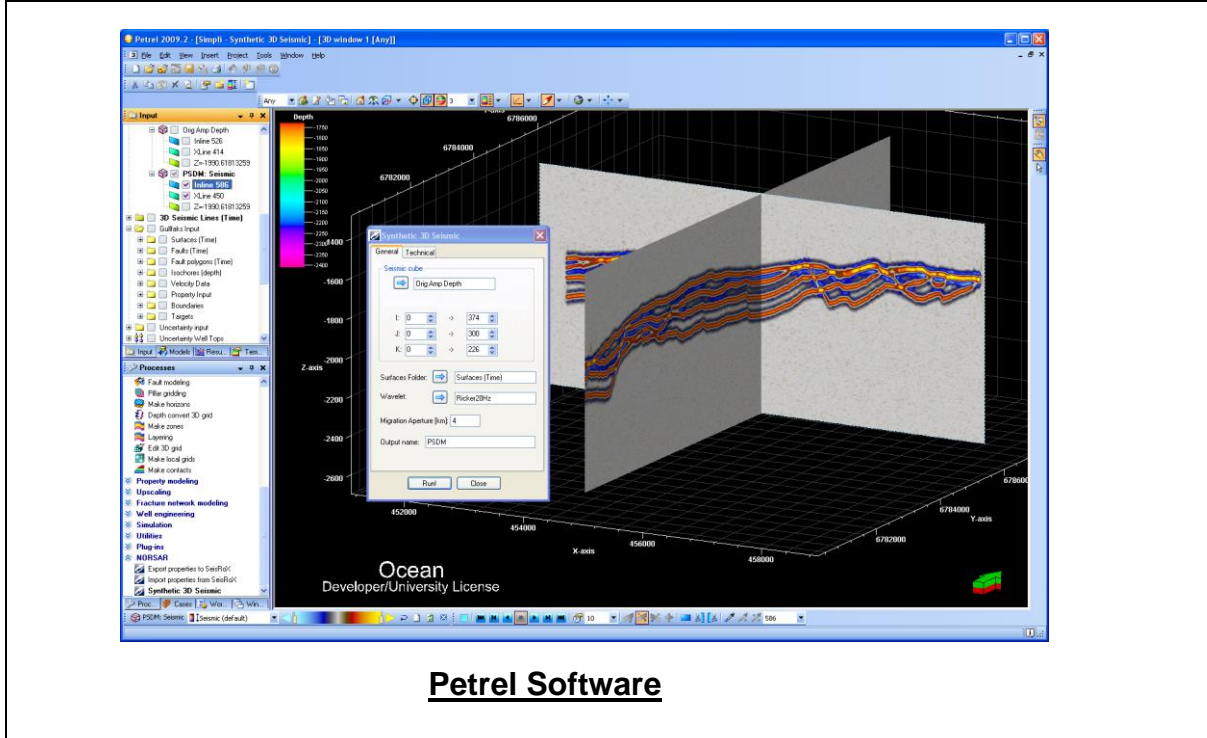
Course Coordinator

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