COURSE OVERVIEW DE0271
Petrel Uncertainty & Optimization

Course Title
Petrel Uncertainty & Optimization

Course Date/Venue
Session 1: August 03-07, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar

Session 2: December 21-25, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar
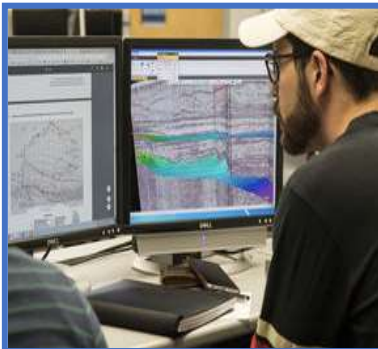
Course Reference
DE0271

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 Uncertainty and Optimization. It covers the capabilities and applications of Petrel software for uncertainty management; the concepts of uncertainty in reservoir modeling; data importing at management for uncertainty analysis; the fundamental concepts and tools of geostatistics and probabilistic modeling; the basic uncertainty study in Petrel and effective ways to visualize uncertain data; the advanced geostatistical methods in Petrel, parametrization of uncertainty monte carlo simulations and handling spatial uncertainty; the uncertainty in porosity, permeability and saturation; and the perform dynamic data integration for uncertainty analysis.
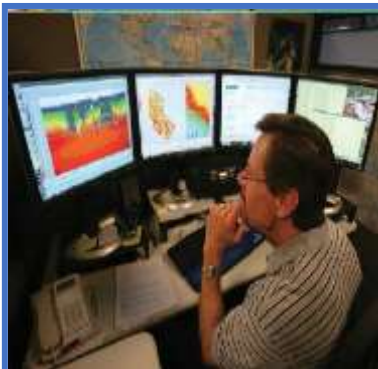
During this interactive course, participants will learn the systematic techniques and best practices in calibrating static models with dynamic data; the sensitivity analysis and scenario evaluation, workflow optimization for history matching and reservoir optimization; the geomodels to reservoir simulation for optimization; the optimization algorithms in Petrel; the field development planning under uncertainty, economic aspects and optimization and advanced uncertainty analysis methods; the workflows for uncertainty and optimization; the risk management and decision making under uncertainty; the emerging technologies and future developments in Petrel; and the implement best practices for reporting and presentation of results.

Course Objectives

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

- Apply and gain an in-depth knowledge on Petrel Uncertainty and Optimization

- Explain the capabilities and applications of Petrel software for uncertainty management

- Discuss the concepts of uncertainty in reservoir modeling and apply data import at management for uncertainty analysis

- Explain the fundamental concepts and tools of geostatistics and probabilistic modeling

- Setup basic uncertainty study in Petrel and apply effective ways to visualize uncertain data

- Carryout advanced geostatistical methods in Petrel, parametrization of uncertainty, monte carlo simulations and handling spatial uncertainty

- Manage uncertainty in porosity, permeability and saturation as well as perform dynamic data integration for uncertainty analysis

- Utilize Petrel for efficient history matching and apply systematic techniques and best practices in calibrating static models with dynamic data

- Employ sensitivity analysis and scenario evaluation, workflow optimization for history matching and reservoir optimization

- Link geomodels for reservoir simulation for optimization and illustrate optimization algorithms in Petrel

- Apply field development planning under uncertainty, economic aspects and optimization and advanced uncertainty analysis methods

- Customize workflows for uncertainty and optimization and apply risk management and decision making under uncertainty

- Discuss the emerging technologies and future developments in Petrel and implement best practices for reporting and presentation of results

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 uncertainty and optimization for geologists, geophysicists, petrophysicists, reservoir engineers, production engineers, drilling engineers and technical support staff who work with geoscientists and engineers.

Course Fee

US$ 8,500 per Delegate. 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: -

- **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.

Accommodation

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

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 **40 years** of **Offshore & Onshore** extensive experience within the **Oil, Gas & Petroleum** industries**.** His area of expertise include Advanced **PTA/RTA**, Advanced **Wellbore** Models, **Well Performance** Models, Advanced **Reservoir** Models, **Fractured Reservoir** Classification & Evaluation, Screening of Oil Reservoirs for **Enhanced Oil Recovery**, **Oil Reservoir** Evaluation & Estimation, **Reserves & Resources**, **Reserves Estimation** & **Uncertainty**, **Reserve** Evaluation, **OIP Estimation & Range** of **Uncertainty**, **Reservoir** Characterization, **Water Flooding**, **Reservoir** Souring & 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 & Heavy Oil, **Reservoir** Volumetrics, Water Drive **Reservoir**, **Cased Hole Logging**, Advanced Petrophysics/Interpretation of **Cased Hole Logs**, **Cased Hole Formation Evaluation**, **Cased Hole Formation** Evaluation, **Cased Hole Evaluation**, **Cased-Hole Logging**, Applied **Production Logging & Cased Hole & Production Log** Evaluation, **Cased Hole Logging & Formation** Evaluation, Open & Cased Hole Logging, **Unconventiona**l **Resource & Reserves** Evaluation, **Oil & Gas Reserves** Estimation, **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**, **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 Supply & Demand**, **Oil Contracts**, **Government Legislation & Oil Contractual Agreements**, **Oil Projects** & Their Feasibility (revenue and profitability), 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**, **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 expert in **simulation** using **KAPPA software**.

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.

Course Program

The following program is planned for this course. However, the course instructor 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 – 0900	**Overview of Petrel Software for Uncertainty Management**: *Capabilities & Applications*
0900 - 0930	**Concepts of Uncertainty in Reservoir Modeling**: *Different Types of Uncertainty*
0930 – 0945	*Break*
0945 – 1130	**Data Import & Management for Uncertainty Analysis**: *Best Practices in Managing Data*
1130 – 1230	**Geostatistics & Probabilistic Modeling**: *Fundamental Concepts & Tools*
1230 – 1245	*Break*
1245 - 1300	**Setting Up a Basic Uncertainty Study in Petrel**: *Step-By-Step Guide to Initiating an Uncertainty Analysis*
1300 - 1420	**Visualization Techniques for Uncertainty**: *Effective Ways to Visualize Uncertain Data*
1420 – 1430	**Recap**
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	**Advanced Geostatistical Methods in Petrel**: *Kriging, Co-Kriging & Stochastic Modeling*
0830 - 0930	**Parameterization of Uncertainty**: *Defining & Managing Input Parameters*
0930 – 0945	*Break*
0945 – 1130	**Monte Carlo Simulations in Petrel**: *Setting Up & Running Monte Carlo Simulations*
1300 – 1230	**Handling Spatial Uncertainty**: *Techniques for Modeling Spatial Variability*
1230 – 1245	*Break*
1245 - 1300	**Uncertainty In Petrophysical Properties**: *Managing Uncertainty in Porosity, Permeability & Saturation*
1300 - 1420	**Practical Exercise**: *Creating a Geostatistical Model with Uncertainty Parameters*
1420 – 1430	**Recap**
1430	*Lunch & End of Day Two*

Day 3

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0730 – 0830	***Dynamic Data Integration for Uncertainty Analysis***: *Incorporating Production & Well Test Data*
0830 - 0930	***Automated History Matching Tools in Petrel***: *Utilizing Petrel for Efficient History Matching*
0930 – 0945	*Break*
0945 – 1130	***Calibrating Static Models with Dynamic Data***: *Techniques & Best Practices*
11:30 – 1230	***Sensitivity Analysis & Scenario Evaluation***: *The Impact of Different Parameters*
1230 – 1245	***Break***
1245 - 1300	***Workflow Optimization for History Matching***: *Streamlining the History Matching Process*
1300 - 1420	***Group Activity***: *Performing History Matching on a Model with Uncertain Parameters*
1420 – 1430	***Recap***
1430	***Lunch & End of Day Three***

Day 4

0730 – 0830	***Overview of Reservoir Optimization***: *Goals & Methodologies*
0830 - 0930	***Linking Geomodels to Reservoir Simulation for Optimization***: *Techniques for Integration*
0930 – 0945	*Break*
0945 – 1130	***Optimization Algorithms in Petrel***: *Exploring Available Tools & Methods*
1300 – 1230	***Field Development Planning Under Uncertainty***: *Strategies for Optimizing Well Placement & Production*
1230 – 1245	*Break*
1245 - 1300	***Economic Aspects of Optimization***: *Considering Cost Factors in Decision-Making*
1300 - 1420	***Case Study Review***: *Analysis of an Optimization Project Using Petrel*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Advanced Uncertainty Analysis Methods***: *Exploring Cutting-Edge Techniques*
0830 - 0930	***Customizing Workflows for Uncertainty & Optimization***: *Tailoring Petrel Workflows to Specific Needs*
0930 – 0945	*Break*
0945 – 1130	***Risk Management & Decision Making Under Uncertainty***: *Approaches for Handling Risk*
1130 – 1230	***Emerging Technologies & Future Developments in Petrel***: *Keeping Up-to-Date with Software Advancements*
1230 – 1245	*Break*
1245 – 1345	***Best Practices for Reporting & Presentation of Results***: *Effective Communication of Uncertainty & Optimization Studies*
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
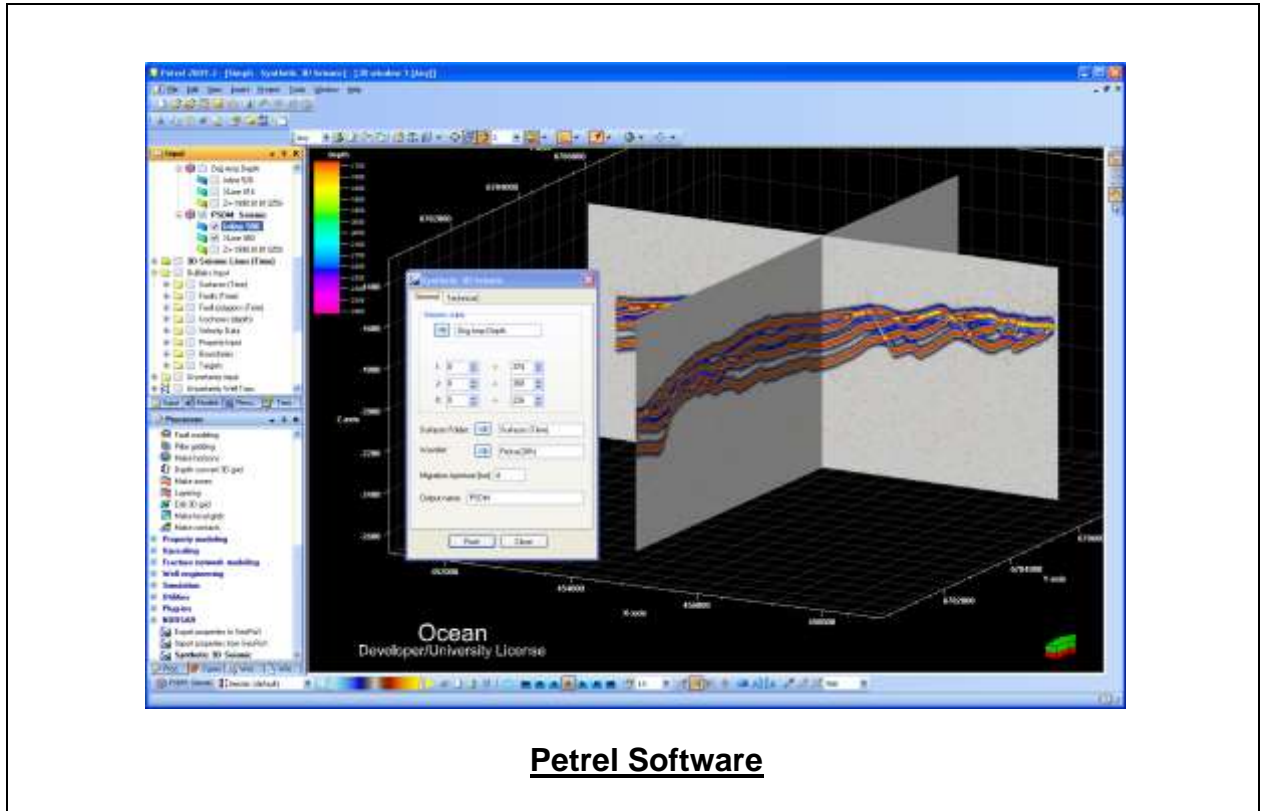
Course Coordinator
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