COURSE OVERVIEW DE0230
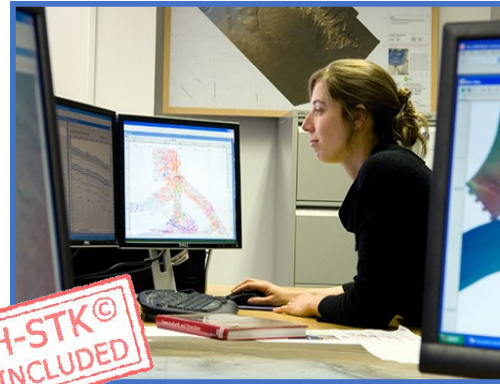**Introduction to 3D Modeling**

Course Title
Introduction to 3D Modeling

Course Date/Venue
Session 1: April 21-25, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: August 17-21, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
DE0230

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 the geological modelling software.*

Geological modelling (analogue & numerical) is increasingly becoming a strategic tool in studies of the Earth, influencing scientific, technical and economic decision-making. Accurate predictions of geological processes require a multiscale and multidisciplinary understanding of the Earth, obtained through a combination of measurements, theory and interpretation. Geological models are usually used qualitatively in seismic interpretation. This course illustrates that quantitative representations of detailed geological models can significantly enhance seismic attribute interpretation through facies classification. In this course, we aim to create a more accurate representation of the reservoir by using 3D synthetic Earth models to guide seismic attribute classification.

3D modeling/visualization is a very powerful tool for understanding geological data, and gives superior opportunities for quality control, detection and correction of inconsistent data. All structural data can be viewed simultaneously in respect of spatial relationship of surfaces and faults. This gives the possibility to compare 3D surfaces with formation tops from well log data, contours and log curves in 3D space. With 3D visualization, errors and data inconsistency become obvious when different types of data from different sources, e.g. seismic interpretations and well log data, do not match. By excluding errors like this, the area of interest can be modeled with more accuracy, which will result in more accurate volume calculations and fewer uncertainties in development of a field.
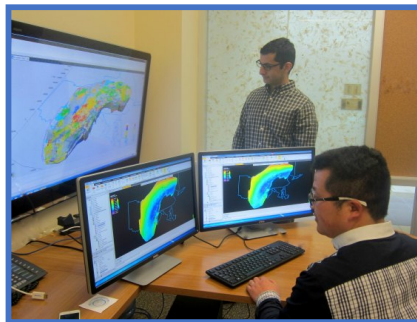
The 3D-visualization tool used in this course is Petrel software which is an integrated Windows based software solution that enables you to solve your subsurface challenges from seismic interpretation through to reservoir simulation and on to drilling. Petrel eliminates the communication problems that exist between different software packages and associated technical disciplines. All work processes in Petrel contribute to developing and refining the same reservoir model, static to dynamic. The Petrel seismic toolkit allows for rapid 2D & 3D seismic interpretation. Sample your seismic data directly into your 3D reservoir model to predict pay, and bias reservoir property distribution using a geostatistical approach.

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

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

- Identify the workflow for 3D geological model construction and 3D digital mapping

- Digitalize and manage structural data

- Check input data and fault modeling

- Analyze structural and 3D geometrical for the construction of geological models as well as structural framework & 3D grid

- Construct 3D geological models (I): tools for analysis and construction including 3D surfaces (TINs) and 3D geological models (II): methods in structurally complex areas

- Control and analyze wells & data

- Illustrate facies modeling – object and pixel-based techniques and discuss petrophysical modeling – interpolation and basic simulation including volumetrics

- Restore 3D geological models: application in 3D model construction

- Identify the 3D fracturation patterns associated to folding

- Discuss restoration of 3D geological models: discussion of algorithms and implications

- Use PETREL Software

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 geological modeling for geologists, geophysicists and reservoir engineers.

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:

Mr. Konstantin Zorbalas, MSc, BSc, is a **Senior Petroleum Engineer & Well Completions Specialist** with over **25 years** of **offshore** and **onshore** experience in the **Oil** & **Gas**, **Refinery** & **Petrochemical** industries. His wide expertise includes **Workovers & Completions**, **Petroleum Risk & Decision Analysis**, **Acidizing Application** in **Sandstone** & **Carbonate**, **Well Testing Analysis**, **Stimulation Operations**, **Reserves Evaluation**, **Reservoir Fluid Properties**, **Reservoir Engineering & Simulation Studies**, **Reservoir Monitoring**, **Artificial Lift Design**, **Gas Operations**, **Workover/Remedial Operations** & **Heavy Oil Technology**, **Applied Water Technology**, **Oil & Gas Production**, **X-mas Tree** & **Wellhead Operations** & **Testing**, **Artificial Lift Systems** (**Gas Lift**, **ESP**, and **Rod Pumping**), **Well Cementing**, **Production Optimization**, **Well Completion Design**, **Sand Control**, **PLT Correlation**, **Slickline Operations**, **Acid Stimulation**, **Well testing**, **Production Logging**, **Project Evaluation** & **Economic Analysis**. Further, he is actively involved in **Project Management** with special emphasis in production technology and field optimization, performing conceptual studies, economic analysis with risk assessment and field development planning. He is currently the **Senior Petroleum Engineer & Consultant** of **National Oil Company** wherein he is involved in the mega-mature fields in the Arabian Gulf, predominantly carbonate reservoirs; designing the acid stimulation treatments with post-drilling rigless operations; utilizing CT with tractors and DTS systems; and he is responsible for gas production and preparing for reservoir engineering and simulation studies, well testing activities, field and reservoir monitoring, production logging and optimization and well completion design.

During his career life, Mr. Zorbalas worked as a **Senior Production Engineer**, **Well Completion Specialist**, **Production Manager**, **Project Manager**, **Technical Manager**, **Technical Supervisor** & **Contracts Manager**, **Production Engineer**, **Production Supervisor**, **Production Technologist**, **Technical Specialist**, **Business Development Analyst**, **Field Production Engineer** and **Field Engineer**. He worked for many **world-class oil/gas companies** such as **ZADCO**, **ADMA-OPCO**, **Oilfield International Ltd**, **Burlington Resources** (later acquired by **Conoco Phillips**), **MOBIL E&P**, **Saudi Aramco**, **Pluspetrol E&P SA**, **Wintershall**, **Taylor Energy**, **Schlumberger**, **Rowan Drilling** and **Yukos EP** where he was in-charge of the **design and technical analysis** of a gas plant with capacity **1.8 billion m3/yr gas**. His achievements include **boosting oil production 17.2% per year** since 1999 using **ESP** and **Gas Lift systems**.

Mr. Zorbalas has **Master** and **Bachelor** degrees in **Petroleum Engineering** from the **Mississippi State University**, **USA**. Further, he is an **SPE Certified Petroleum Engineer**, **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an active member of the Society of Petroleum Engineers (**SPE**) and has numerous scientific and technical publications and delivered innumerable training courses, seminars 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 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	**Workflow for 3D Geological Model Construction**
0930 – 0945	*Break*
0945 – 1100	**3D Digital Mapping**
1100 – 1230	**Digitalization and Management of Structural Data**
1230 – 1245	*Break*
1245 – 1330	**QC of Input Data**
1330 – 1420	**Fault Modeling**
1420 – 1430	**Recap**
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	**Structural and 3D Geometrical Analysis for the Construction of Geological Models**
0830 – 0930	**Structural Framework & 3D Grid**
0930 – 0945	*Break*
0915 – 1100	**Construction of 3D Geological Models (I): Tools for Analysis and Construction**
1100 – 1230	**Construction of 3D Surfaces (TINs)**
1230 – 1245	*Break*
1245 – 1420	**Practical Session: Construction of a 3D Surface**
1420 – 1430	**Recap**
1430	*Lunch & End of Day Two*

Day 3

| 0730 – 0830	*Construction of 3D Geological Models (II): Methods in Structurally Complex Areas*
0830 – 0930	*QC of Wells & Data Analysis*
0930 – 0945	*Break*
0945 – 1100	*Facies Modeling – Object and Pixel Based Techniques*
1100 – 1215	*Petrophysical Modeling – Interpolation and Basic Simulation*
1215 – 1230	*Break*
1230 – 1420	*Volumetrics*
1420 – 1430	*Recap*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	*Restoration of 3D Geological Models: Application in 3D Model Construction*
0830 – 0930	*Restoration of 3D Geological Models: Discussion of Algorithms and Implications*
0930 – 0945	*Break*
0945 – 1100	*3D Fracturation Patterns Associated to Folding*
1100 – 1215	*Practical Session: Multivalued Surfaces*
1215 – 1230	*Break*
1230 – 1420	*Practical Session: Restoration of 3D Models*
1420 – 1430	*Recap*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	*Practical Hands-On Session Using PETREL Software*
0930 – 0945	*Break*
0945 – 1100	*Practical Hands-On Session Using PETREL Software (cont'd)*
1100 – 1215	*Practical Hands-On Session Using PETREL Software (cont'd)*
1215 – 1230	*Break*
1230 – 1345	*Practical Hands-On Session Using PETREL Software (cont'd)*
1345 – 1400	*Course Conlusion*
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.
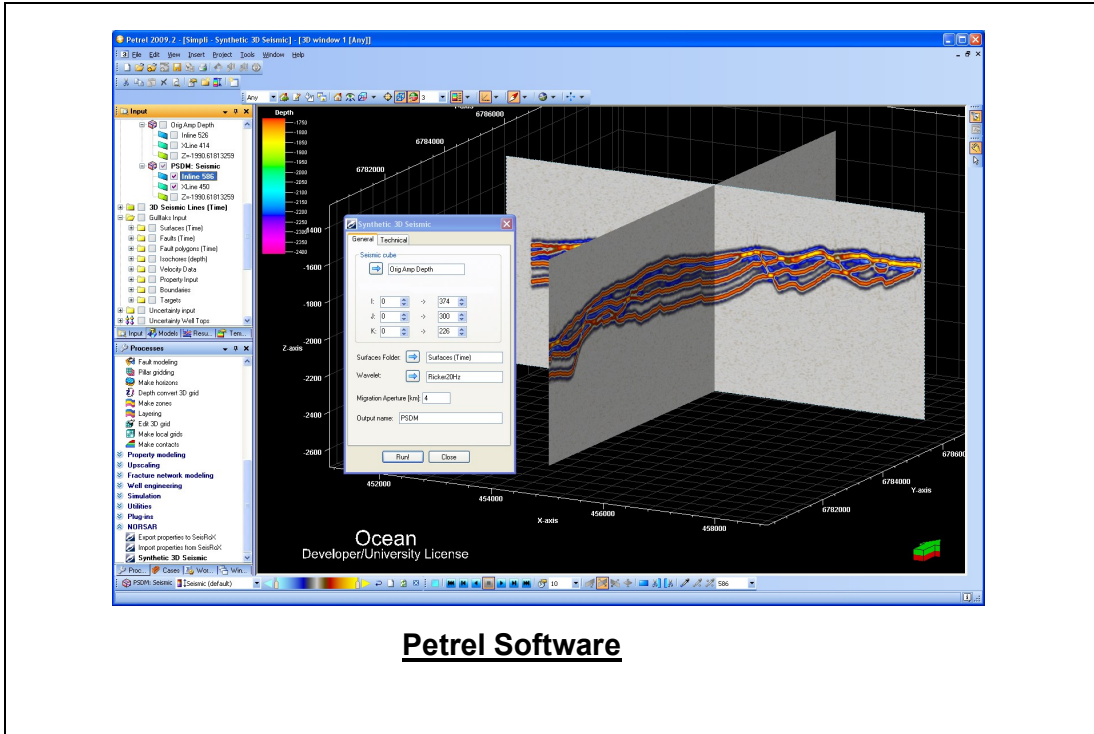
Petrel Software

Course Coordinator

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