COURSE OVERVIEW DE0694
Surface/Subsurface Model Integration

Course Title
Surface/Subsurface Model Integration

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
DE0694

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

Course Description

This hands-on, 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 intended for geoscientists, engineers and other technical staff who want to analyze and integrate image, log and dip data to enhance their understanding of exploration plays and field development. It leans heavily on worked class examples and case studies. Instead of interpreting image and dip data in isolation, the course shows how they can be used in conjunction with cores, other logs, modern depositional analogues, outcrop studies and hi-resolution seismic data to refine reservoir models.

This course is designed to provide an up-to-date overview on subsurface facies analysis integrating borehole images and well logs with rock physics and seismic data to develop geologic models. It covers the image, dip acquisition and processing; the various exercises with some real data; the guide to image quality; the structural analysis using image and dip data; the various types of sedimentary basins in different tectonic contexts; the large-scale tectonic settings of main types of sedimentary basins and relationship between structural style and fill patterns; and distribution patterns and the correlation in different sedimentary settings.

By the end of the course, participants will be able to identify the role of analogs in building reservoir models in different depositional settings and the sediment generation and supply in different settings; recognize the fluid dynamics and rheology of erosion, transport and deposition; analyze the basic mechanics of sediment erosion, transport, deposition, resultant bedforms and sedimentary structures; carryout stratigraphic analysis using image and dip data; differentiate eolian sediments, fluvial sediments, and deltaic sediments; illustrate sequence stratigraphy; and recognize carbonate shelf sediments, fracture systems and geothermal systems in volcanic rocks.

Course Objectives

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

- Apply and gain an in-depth knowledge on subsurface facies analysis integrating borehole images and well logs with petrophysical and seismic data to develop geologic models
- Discuss the measurement principles and wellsite acquisition including the value of high recognition image data
- Illustrate image processing and display, dip computation and troubleshooting
- Explain the image, dip processing and LQC, image description and interpretation steps and comparison with core photos
- Review the guide to image quality and apply structural analysis using image and dip data
- Identify the types of sedimentary basins in different tectonic contexts
- Recognize the large-scale tectonic settings of main types of sedimentary basins and relationship between structural style and fill patterns
- Describe the distribution patterns and the correlation in different sedimentary settings
- Discuss the role of analogs in building reservoir models in different depositional settings
- Determine sediment generation and supply in different settings as well as the fluid dynamics and rheology of erosion, transport and deposition
- Identify the basic mechanics of sediment erosion, transport, deposition, resultant bedforms and sedimentary structures
- Carryout stratigraphic analysis using image and dip data
- Differentiate eolian sediments, fluvial sediments and deltaic sediments
- Illustrate sequence stratigraphy covering parasequences and basin margin architecture as well as aid to correlation and modelling
- Recognize carbonate shelf sediments and fracture systems
- Describe geothermal systems in volcanic rocks like the lithofacies in volcanic setting

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 is intended for geoscientists, engineers and other technical staff who want to analyze and integrate image, log and dip data to enhance their understanding of exploration plays and field development.

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 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 **30 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**, **Production Operations**, **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's** and **Bachelor's** degree 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.

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	***Image & Dip Acquisition & Processing*** *Measurement Principles and Wellsite Acquisition • Value of High-Resolution Image Data • Image Processing & Display • Dip Computation and Troubleshooting*
0930 – 0945	*Break*
0945 – 1100	***Exercise with Some Real Data*** *Image & Dip Processing and LQC • Image Description & Interpretation Steps • Comparison with Core Photos and Description*
1100 – 1215	***Guide to Image Quality*** *Excercises in Bad Borehole and Tool Responses*
1215 – 1230	*Break*
1230 – 1330	***Structural Analysis Using Image & Dip Data*** *Structural Dip Trends and Structural Dip Removal • Unconformities • Normal and Growth Faults • Reverse and Thrust Faults • Are Faults Sealing?*
1330 – 1420	***Types of Sedimentary Basins in Different Tectonic Contexts***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Large-Scale Tectonic Settings of Main Types of Sedimentary Basins and Relationship Between Structural Style and Fill Patterns***
0930 – 0945	*Break*
0945 – 1100	***Distribution Patterns***
1100 – 1215	***Correlation in Different Sedimentary Settings***
1215 – 1230	*Break*
1230 – 1420	***Role of Analogs in Building Reservoir Models in Different Depositional Settings***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Sediment Generation & Supply in Different Settings***
0930 – 0945	*Break*
0945 – 1100	***Fluid Dynamics & Rheology of Erosion, Transport & Deposition***
1100 – 1215	***Basic Mechanics of Sediment Erosion, Transport, & Deposition; Resultant Bedforms & Sedimentary Structures***
1215 – 1230	*Break*
1230 – 1420	***Stratigraphic Analysis Using Image & Dip Data*** *Depositional Environments & Facies Analysis • Lithofacies from Log & Image Data • Lithology, Grain Size Variation, Need to Integrate • Geometry • Sedimentary Structures • Paleocurrent Directions • Integration & Modelling at the Field Level*
1420 – 1430	***Recap***
1430	*End of Day Three*

Day 4

0730 – 0930	***Eolian (Wind-Blown) Sediments*** *Sedimentary Structures & Dune Forms • Complexities in Deposition Setting & Stratigraphic Section • Building Reservoir Model & Populating with Data • Outcrap Studies as Input to Reservoir Simulation*
0930 – 0945	*Break*
0945 - 1100	***Fluvial Sediments*** *Fluvial Settings (Various Models) • Braided System Lithotypes & Sedimentary Features • Meandering System Lithotypes & Sedimentary Features • Point Bar Development (Predictions) • Channel Models as Developed by Geostatistics • Channel Models Constrained by Outcrap Analogues • Correlation and Sequence Stratigraphic Considerations*
1100 – 1215	***Deltaic Sediments*** *Delta Classifications and Models • Associated Sand Geometries • Image & Dip Character in Distributary Fronts & Channels • Case Study from South Sumatra Basin; Developing a Play Concept to Identify Most Prospective Area Within Structural Closure*
1215 – 1230	*Break*
1230 - 1420	***Sequence Stratigraphy*** *Parasequences & Basin Margin Architecture • Aid to Correlation & Modelling*
1420 – 1430	***Recap***
1430	*End of Day Four*

Day 5

0730 – 0930	***Carbonate Shelf Sediments*** *Carbonate Models and *Facies in Coastal and Shelf Settings • Carbonate Reefs, and Orienting Reefal Trends • Porosity Enhancement and Reduction • Sequence Stratigraphy in Carbonate Sequences • Generating Reservoir Model from Outcrop Data and 3D Seismic*
0930 – 0945	*Break*
0945 – 1100	***Fracture Systems*** *Fracture Types; Open, Healed, Vuggy, Syneresis • Natural or Induced: Borehole Breakout & Tensile Fractures • Impacts on Planning Fracture Jobs for Stimulation • Fracture Orientation*
1100 - 1215	***Fractured Reservoir Case Studies*** *Case Study: Identifying & Evaluating Producing Horizons in Fractured Basement Offshore Vietnam • Case Study: Simulation of a Producing Fracture System in a Mid-East Giant*
1215 – 1230	*Break*
1230 – 1345	***Geothermal Systems in Volcanic Rocks (Optional)*** *Lithofacies in Volcanic Settings • Case Study: Using Images to Resolve Reservoir Delineation and Development Issues*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*End of Course*

Practical Sessions

This hands-on, highly-interactive course includes the real-life case studies and exercises:-

Course Coordinator

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