

COURSE OVERVIEW DE0521
Quantitative Interpretation Using Seismic Data

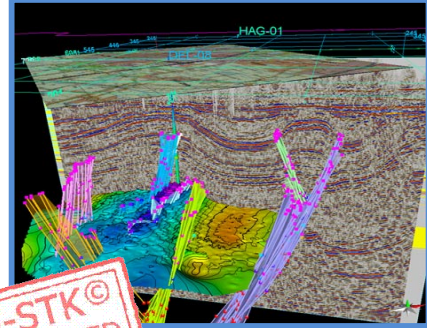
Course Title

Quantitative Interpretation Using Seismic Data

Course Date/Venue

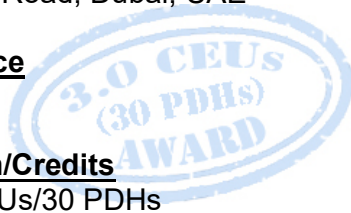
Session 1: May 12-16, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Session 2: November 02-06, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

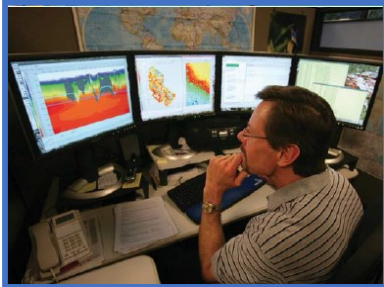
DE0521



Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

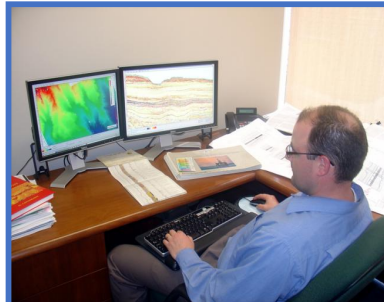
Course Description



This practical and 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.



Creation of shareholder value should be at the heart every business decision. This course is geared towards explorationists who are involved in screening seismic data for possible leads that they develop into prospects. This is a hands-on course where the instructor spends as little time on lectures as possible and the bulk of the time is spent interpreting seismic lines. These lines have been collected from oil producing basins worldwide and provide textbook examples of structural and stratigraphic geometries.



The course is evenly divided between the seismic expression of structural styles and seismic stratigraphy. After spending minimal time on acquisition and background theory participants will be made acutely aware of impedance and resolution and identification of processing errors and how important it is to understand these before interpretation. The participants will be introduced to the structural complexity associated with fold and thrust terrains, extensional systems and various types of wrench faulting and salt/mud related deformation.

The seismic stratigraphy portion of the course not only covers the practice of sequence stratigraphy using seismic data (AAPG Memoir 26), but also spends quite a bit of time on seismic facies analysis in cross-sectional view. Through lots of exercises by the end of the course everyone should be proficient at sequence analysis on seismic lines and be able to interpret depositional environments and net:gross using seismic facies analysis. The course will also introduce participants to the world of seismic geomorphology, attribute analysis and direct hydrocarbon indicators with an emphasis on unconventional resource plays such as fractured shale gas reservoirs and tight-gas sandstones.

Participants are strongly urged to bring paper copies of their own seismic data to work on. These data will not be shared with anyone and will only be reviewed by the instructor.

Course Objectives

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

- Apply and gain an in-depth knowledge on seismic interpretation
- Discuss the seismic methodology of seismic interpretation, seismic acquisition and processing, seismic frequency and its relationship to bed thickness, impedance, detection and resolution
- Calculate seismic frequency and resolution as well as recognize the belts compressional tectonics, fold and thrust belts
- Interpret fold and thrust belts and explain the extensional systems
- Interpret rifts, strike-slip and oblique slip systems and identify the wrench faults, flower structures, salt tectonics and shale diapirism
- Illustrate seismic sequence stratigraphy covering the principles of accommodation, relative sea-level cycle, systems tracts, reflection terminations and the identification of key surfaces on seismic data
- Perform sequence analysis on seismic lines
- Analyze seismic facies for external geometries and internal reflection configuration, the ABC method of defining seismic facies, reflection patterns, continuity and amplitude to determine environments of deposition and net gross
- Determine the horizon slices, stratal and the advantages/disadvantages of each including common seismic attributes direct application to unconventional resource plays such as tight-gas sandstones and fractured shale plays
- Recognize the different delivery system that includes direct hydrocarbon indicators like flat spots, bright spots and polarity reversals

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard 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 seismic interpretation for geoscientists, geologists, geophysicists that spend most of their time interpreting seismic data on the workstation. Whether you are an early career geoscientist wanting to learn a systematic approach to seismic interpretation or an experienced professional wanting to learn some of the latest techniques to have emerged in structural geology and seismic stratigraphy, this is the course for you.

Course Certificate(s)


Internationally recognized certificates will be issued to all participants of the course completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations:-

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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.

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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.

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® (Howard 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	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	<i>Introduction to Seismic Acquisition & Processing, Seismic Frequency & its Relationship to Bed Thickness, Impedance, Detection & Resolution</i> <i>The Systematic Methodology of Seismic Interpretation</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Exercise on Calculating Seismic Frequency & Resolution</i>
1100 – 1230	<i>Compressional Tectonics & Fold & Thrust Belts</i> <i>Horses, Piggy-Back Thrusting, Duplexes & Antiformal Stacks, Triangle-Zones, Fault Propagation Folds, Fault Bend Folds & Detachment Folds</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Exercises on Interpretation of Fold & Thrust Belts</i>
1420 – 1430	Recap
1430	<i>End of Day One</i>

Day 2

0730 – 0930	<i>Extensional Systems</i> <i>Planar & Listric Normal Faults, Relay Ramps, Rollover Anticlines</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Extensional Systems (cont'd)</i> <i>Antithetic & Synthetic Faults, Inversion Structures, Salt & Mud Diarism Related Deformation</i>



1100 – 1230	<i>Exercises on Interpretation of Rifts, Strike-Slip & Oblique Slip Systems</i>
1230 – 1245	<i>Break</i>
1245 - 1420	<i>Wrench Faults, Flower Structures, Salt Tectonics & Shale Diarism</i>
1420 – 1430	Recap
1430	<i>End of Day Two</i>

Day 3

0730 – 0930	<i>Seismic Sequence Stratigraphy Principles of Accommodation</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Seismic Sequence Stratigraphy: (cont'd) Relative Sea-Level Cycle, Systems Tracts</i>
1100 – 1230	<i>Seismic Sequence Stratigraphy: (cont'd) Reflection Terminations & the Identification of Key Surfaces on Seismic Data</i>
1230 – 1245	<i>Break</i>
1245 - 1420	<i>Exercises on Performing Sequence Analysis on Seismic Lines</i>
1420 – 1430	Recap
1430	<i>End of Day Three</i>

Day 4

0730 – 0930	<i>Seismic Facies Analysis External Geometries & Internal Refection Configuration</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Seismic Facies Analysis (cont'd) The ABC Method of Defining Seismic Facies</i>
1100 – 1230	<i>Seismic Facies Analysis (cont'd) Reflection Patterns, Continuity & Amplitude & Using these to Determine Environments of Deposition & Net: Gross</i>
1230 – 1245	<i>Break</i>
1245 - 1420	<i>Exercises on Seismic Facies Analysis</i>
1420 – 1430	Recap
1430	<i>End of Day Four</i>

Day 5

0730 – 0930	<i>Time Slices Horizon Slices & Stratal & the Advantages/Disadvantages of Each</i>
0930 – 0945	<i>Break</i>
0945 -1100	<i>Time Slices (cont'd) Common Seismic Attributes Direct Application to Unconventional Resource Plays Such as Tight-Gas Sandstones & Fractured Shale Plays</i>
1100 – 1230	<i>Recognizing the Different Delivery System Direct Hydrocarbon Indicators Such as Flat Spots, Bright Spots & Polarity Reversals</i>
1230 – 1245	<i>Break</i>
1245 - 1345	Workshop on Participant Data
1345 – 1400	Course Conclusion
1400 – 1415	POST- TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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