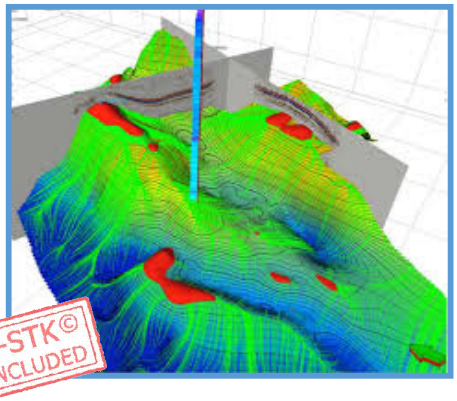
COURSE OVERVIEW DE0891
Integrated 3D Reservoir Modeling

Course Title
Integrated 3D Reservoir Modeling



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
DE0891

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

Course Description

This practical and highly-interactive course includes practical sessions and exercises. Theory learnt will be applied using 3D seismic simulator.

Pre- and post-stack seismic attributes are playing a key role for the daily-basis geographical and geological work during exploration, appraisal and development phases. The utilization of the seismic attributes requires understanding of their physical bases as well as the geological model(s) that could be extracted from them.

In this course, the physical and mathematical bases of the seismic attributes will be comprehensively explained. Geological interpretation of each post-and pre-seismic attribute will be explained with obvious examples. The course explains the detailed workflows to distinguish and delineate the potential reservoirs and their depositional elements that of course will result in reducing the drilling risks. The course also discusses the approaches and methodologies to be applied to the reservoir to characterize them in terms of rock properties, pore fluid type and depositional architecture modeling. This course also discusses the geological models of different tectonic settings and their seismic expression and seismic attribute analysis to delineate the structural styles of each tectonic setting.

This course will provide a detailed and up-to-date overview of 3D seismic attributes for reservoir characterization. It covers the basic principles of 3D seismic attribute; the overview of seismic attributes; the definition, terminologies and classifications of seismic attributes; the post-stack seismic attributes including complex seismic trace, structural and stratigraphic, seismic discontinuity, seismic spectral decomposition and seismic waveform classification (segmentation); the pre-stack seismic (AVO) attributes comprising of basic principles of rock physics analysis and modeling, seismic data processing and conditioning prior AVO analysis and interpretation, equations used for AVO analysis and interpretation, AVO analysis and attribute interpretation, AVO attributes catalogue and reservoir delineation and characterization using AVO attributes; the applied workflows; the deltaic propagading wedges and their depositional elements as well as interpreting and mapping fault systems in complex tectonic settings; computing reservoir porosities using seismic amplitude; and delineate the H.C. reservoirs using Seismic AVO attributes.

The course has practical sessions using real seismic and well-log data to apply the explained ideas and workflows using different industrial software (Hampson-Russel Software).

Course Objectives

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

- Apply and gain an in-depth knowledge on 3D seismic attributes for reservoir characterization
- Identify the basic principles of 3D seismic attribute covering wave propagation, seismic wavelets and their elements, vertical 'temporal' resolution of seismic data and the methods to improve vertical resolution of seismic data
- Discuss the overview of seismic attributes and define its terminologies and classifications
- Explain the post-stack seismic attributes including complex seismic trace attributes, structural and stratigraphic attributes, seismic discontinuity attributes, seismic spectral decomposition and seismic waveform classification (segmentation)
- Describe the pre-stack seismic (AVO) attributes comprising of basic principles of rock physics analysis and modeling, seismic data processing and conditioning prior AVO analysis and interpretation, equations used for AVO analysis and interpretation, AVO analysis and attribute interpretation, AVO attributes catalogue and reservoir delineation and characterization using AVO attributes
- Carryout the applied workflows covering delineation of deepwater depositional architecture elements and fluvial depositional architecture elements
- Define deltaic propagading wedges and their depositional elements as well as interpret and map fault systems in complex tectonic settings
- Compute reservoir porosities using seismic amplitude and delineate the H.C. reservoirs using Seismic AVO attributes

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 reservoir characterization for geoscientists, geologists, petrophysicists, geophysicists and reservoir engineers.

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.

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. David Berryman is a **Senior Drilling Operations Engineer** with over **40 years** of **Offshore** & **Onshore** experience within the **Oil & Gas** industries. He is an international expert in **Drill String** Intensity & Design, **Drill String** Optimization, **Stuck Pipe Prevention**, **Wireline** Operations & Techniques, **Fishing** Operations, **Drilling & Petroleum** Engineering, **ERD Drilling**, **Well Service** Operations, **Well Test** Design & Analysis, **Well Composite**, **Construction Integrity**, **Completion & Production** Optimization, **Well Completion**, **Well Integrity** Management, **Well Bore** Analysis, **Well Control** & **Blowout Prevention**, **Well Bore Integrity**, High Pressure High Temperature (**HPHT**), Pulling Out of Hole (**POOH**), **PWD Interpretation**, **Surface Logging**, **Drilling Optimization**, **Well Planning**, **Horizontal** & **Directional Drilling**, **Well Hole Cleaning**, **Mud-Logging**, **Downhole Vibration**, **Extended Reach Drilling**, **Torque & Drag Modelling**, **Pore Pressure** Evaluation, **Pressure Transient Testing & Reservoir Performance** Evaluation, **Review Process Data & Fluid Properties**, **Conductor Line Pressure Surveys** and **Chemical Tubing Cutting**. He is also well-versed in Bow-Tie HSE Risk Management System, **Hydraulics** Management, Data Interpretation, **Petroleum Data** Management, Hydraulic Calculations, Safety Management System, **Rig** Operations and various **drilling softwares** including **Well Plan** and **Compass** (**Landmark**); DFG, Planit, Insite Anywhere (**Halliburton**); Discovery Well, Discovery Web (Kongsberg); Digital Well File (Petrolink) and Well View (Peloton).

Throughout his long career life, Mr. Berryman has worked for many international companies in the **Gulf of Mexico**, **Europe**, **Africa**, **Central Asia** (Kazakhstan) the **Middle East**, **Far East** and the **North Sea** such as Marathon Oil UK, Talisman-Sinopec, BG Group, Sperry Drilling, Stavanger, BP, Hycalog, Camtest/Camco and Gearheart. He had occupied various key positions as the **Drilling Manager**, **Drilling Engineer Supervisor**, **Drilling Supervisor**, **Drilling Operations Engineer**, **Applied Drilling Technology Engineer**, **Data Engineer**, **Mud Logger**, **Sales & Service Engineer** and **Downhole Gauge Engineer** and **Senior Instructor/Trainer**. During this period, he has led the development of a **software solution** for real-time monitoring of drag whilst tripping in extended reach wells.

Mr. Berryman has a **Bachelor's** degree in **Mining** from the **University of Leeds**, **UK**. Further, he has acquired **certifications** from the **IWCF** for **Combined Surface** and **Subsea Blow-Out Preventer Stack**, the **BOSIET**, the **UKCS** for Offshore Working and the **Prince2 Foundation** for **Project Management**. Further, he is a **Certified Instructor/Trainer**, a **Drill String Design Proctor** by **Fearnley**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has delivered and presented innumerable training courses and workshops worldwide.

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.

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	***Basic Principles*** *Seismic Wave Propagation ● Seismic Wavelets & their Elements*
0930 – 0945	*Break*
0945 – 1100	***Basic Principles (cont'd)*** *Vertical "Temporal" Resolution of Seismic Data*
1100 – 1200	*Lunch*
1200 – 1230	***Basic Principles (cont'd)*** *Methods to improve Vertical Resolution of Seismic Data*
1230 – 1245	*Break*
1245 – 1420	***Basic Principles (cont'd)*** *Practical Sessions using Real Data*
1420 – 1430	***Recap***
1430	*End of Day One*

Day 2

0730 – 0930	***Overview of Seismic Attributes*** *Definitions & Terminologies*
0930 – 0945	*Break*
0945 – 1100	***Overview of Seismic Attributes (cont'd)*** *Definitions & Terminologies (cont'd)*
1100 – 1200	*Lunch*
1200 – 1230	***Overview of Seismic Attributes (cont'd)*** *Classifications of Seismic Attributes*
1245 – 1330	*Break*
1330 – 1420	***Overview of Seismic Attributes (cont'd)*** *Classifications of Seismic Attributes (cont'd)*
1420 – 1430	***Recap***
1430	*End of Day Two*

Day 3

0730 – 0930	***Post-stack Seismic Attributes*** *Complex Seismic Trace Attributes ● Structural & Stratigraphic Attributes*
0930 – 0945	*Break*
0945 – 1100	***Post-stack Seismic Attributes (cont'd)*** *Seismic Discontinuity Attributes ● Seismic Spectral Decomposition*
1100 – 1200	*Lunch*
1200 – 1230	***Post-stack Seismic Attributes (cont'd)*** *Seismic Waveform Classification (Segmentation)*
1230 – 1330	*Break*
1330 – 1420	***Post-stack Seismic Attributes (cont'd)*** *Practical Sessions using Real Data*
1420 – 1430	***Recap***
1430	*End of Day Three*

Day 4

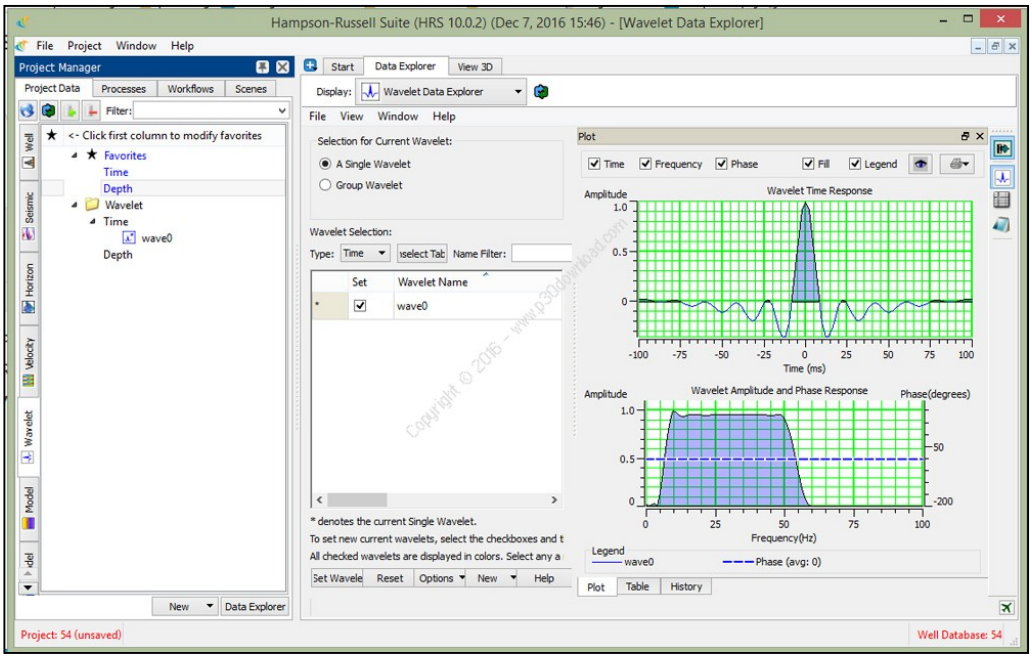
0730 – 0930	***Pre-stack Seismic (AVO) Attributes*** *Basic Principles of Rock Physics Analysis & Modeling ● Why AVO?*
0930 – 0945	*Break*
0945 – 1100	***Pre-stack Seismic (AVO) Attributes (cont'd)*** *Seismic Data Processing & Conditioning prior AVO Analysis & Interpretation ● Equations used for AVO Analysis & Interpretation*
1100 – 1200	*Lunch*
1200 – 1230	***Pre-stack Seismic (AVO) Attributes (cont'd)*** *AVO Analysis & Attribute Interpretation ● AVO Attributes Catalogue*
1230 – 1245	*Break*
1230 – 1420	***Pre-stack Seismic (AVO) Attributes (cont'd)*** *Reservoir Delineation & Characterization using AVO Attributes ● Practical Sessions using Real Data*
1420 – 1430	***Recap***
1430	*End of Day Four*

Day 5

0730 – 0930	***Applied Workflows*** *Delineate Deepwater Depositional Architecture Elements ● Delineate Fluvial Depositional Architectural Elements*
0930 – 0945	*Break*
0945 – 1100	***Applied Workflows (cont'd)*** *Define Deltaic Propagading Wedges & their Depositional Elements ● Interpreting & Mapping Fault Systems in Complex Tectonic Settings*
1100 – 1200	*Lunch*
1200 – 1230	***Applied Workflows (cont'd)*** *Compute Reservoir Porosities using Seismic Amplitude*
1230 – 1245	*Break*
1245 – 1345	***Applied Workflows (cont'd)*** *Delineate the H. C. Reservoirs using Seismic AVO Attributes*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*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 "Hampson-Russel Software" simulator.



Hampson-Russel Software

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org