

COURSE OVERVIEW DE0043
Full Waveform Inversion

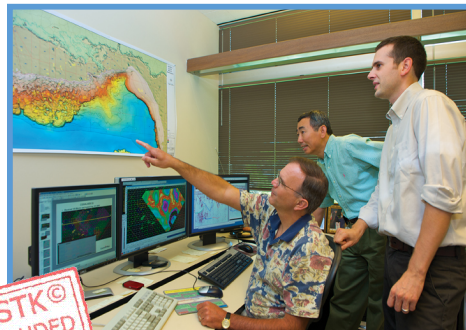
Course Title

Full Waveform Inversion

Course Date/Venue

Session 1: June 16-20, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Session 2: November 23-27, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

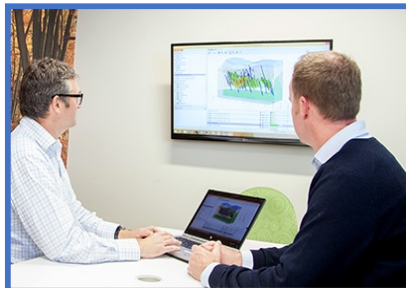
DE0043



Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

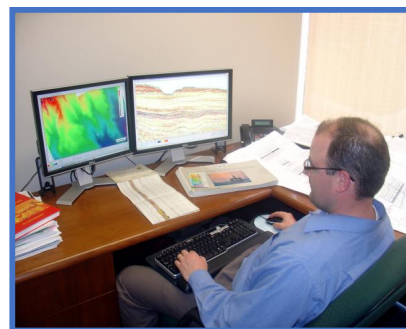
Course Description



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.



This course is designed to provide participants with a detailed and up-to-date overview of Seismic Inversion Techniques, Methods and Application. It covers the purpose of seismic inversion; the and evolution of seismic inversion techniques and the relationship between seismic data and subsurface properties; the seismic data processing and preparation for inversion; the quality control and correction techniques and pre-stack and post-stack data preparation; the basic and advanced seismic inversion techniques; and the amplitude versus offset inversion, reflectivity inversion, AVO inversion, full waveform inversion and joint inversion.



During this interactive course participants will learn the subsurface rock properties and fluid properties using seismic inversion; the well log data in seismic inversion and fluid property estimation and geological structure analysis in hydrocarbon exploration and production; the subsurface geological structures and reservoir properties using seismic inversion; and the seismic inversion with other geophysical and geological data for reservoir characterization.

Course Objectives

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

- Apply and gain a comprehensive knowledge on seismic inversion techniques, methods and application
- Discuss the purpose of seismic inversion as well as the evolution of seismic inversion techniques and the relationship between seismic data and subsurface properties
- Illustrate seismic data processing and preparation for inversion
- Carryout data quality control and correction techniques and pre-stack and post-stack data preparation
- Employ basic and advanced seismic inversion techniques and discuss amplitude versus offset inversion, reflectivity inversion, AVO inversion, full waveform inversion and joint inversion
- Estimate subsurface rock properties and fluid properties using seismic inversion
- Integrate well log data in seismic inversion and fluid property estimation and geological structure analysis in hydrocarbon exploration and production
- Estimate subsurface geological structures and reservoir properties using seismic inversion
- Integrate seismic inversion with other geophysical and geological data for reservoir characterization

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 inversion techniques, methods and application for geophysicists, geologists and reservoir engineers.

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 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:



Ms. Diana Helmy, PgDip, MSc, BSc, is a **Senior Petroleum & Geologist** with extensive years of experience within the **Oil & Gas, Refinery** and **Petrochemical** industries. Her expertise widely covers in the areas of **Tubular & Pipe Handling, Tubular Strength, Casing & Tubing Design, Production/Injection Loads** for Casing Strings & Tubing, **Drilling Loads, Drilling & Production Thermal Loads, Well Architecture, Wellhead Integrity, Well Integrity & Artificial Lift, Well Integrity Management, Well Completion & Workover, Applied Drilling Practices, Horizontal Drilling, Petroleum Production, Resource & Reserve Evaluation, Reserves Estimation & Uncertainty, Methods for Aggregation of Reserves & Resources, Horizontal & Multilateral Wells, Well Completion & Stimulation, Artificial Lift System Selection & Design, Well Testing & Oil Well Performance, Well Test Design Analysis, Well Test Operations, Well Testing & Perforation, Directional Drilling, Formation Damage Evaluation & Preventive, Formation Damage Remediation, Drilling & Formation Damage, Simulation Program for The International Petroleum Business, Well Testing & Analysis, Horizontal & Multilateral Wells & Reservoir Concerns, Oil & Gas Analytics, Petrophysics & Reservoir Engineering, Subsurface Geology & Logging Interpretation, Petroleum Geology, Geophysics, Seismic Processing & Exploration, Seismic Interpretation, Sedimentology, Stratigraphy & Biostratigraphy, Petroleum Economy, Core Analysis, Well Logging Interpretation, Core Lab Analysis & SCAL, Sedimentary Rocks, Rock Types, Core & Ditch Cuttings Analysis, Clastic, Carbonate & Basement Rocks, Stratigraphic Sequences, Petrographically Analysis, Thin Section Analysis, Scanning Electron Microscope (SEM), X-ray Diffraction (XRD), Cross-Section Tomography (CT), Conventional & Unconventional Analysis, Porosity & Permeability, Geological & Geophysical Model, Sedimentary Facies, Formation Damage Studies & Analysis, Rig Awareness, 2D&3D Seismic Data Processing, Static & Dynamic Correction, Noise Attenuation & Multiple Elimination Techniques, Velocity Analysis & Modeling and various software such as Petrel, OMEGA, LINUX, Kingdom and Vista. She is currently a **Senior Consultant** wherein she is responsible in different facets of **Petroleum & Process Engineering** from managing **asset integrity, well integrity process, pre-commissioning/commissioning** and **start up** onshore & offshore process facilities.**

During her career life, Ms. Diana worked as a **Reservoir Geologist, Seismic Engineer, Geology Instructor, Geoscience Instructor & Consultant** and **Petroleum Geology Researcher** from various international companies like the **Schlumberger, Corex Services for Petroleum Services, Petrolia Energy Supplies** and **Alexandria University**.

Ms. Diana has a **Postgraduate Diploma in Geophysics, Master's degree in Petroleum Geology and Geophysics** and a **Bachelor's degree in Geology**. Further, she is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM)** and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.

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(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	Introduction to Seismic Inversion <i>Seismic Inversion and It's Purpose • History & Evolution of Seismic Inversion Techniques • The Relationship Between Seismic Data & Subsurface Properties</i>
0930 – 0945	<i>Break</i>
0945 - 1145	Seismic Data Processing & Preparation for Inversion <i>Data Quality Control & Correction Techniques</i>
1145 -1230	Seismic Data Processing & Preparation for Inversion (cont'd) <i>Pre-Stack & Post-Stack Data Preparation</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Seismic Data Processing & Preparation for Inversion (cont'd) <i>Pre-Stack & Post-Stack Data Preparation (cont'd)</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 830	Basic Seismic Inversion Concepts & Techniques <i>Basic Seismic Inversion Techniques • Amplitude Versus Offset Inversion • Reflectivity Inversion</i>
0830 - 0930	Basic Seismic Inversion Concepts & Techniques (cont'd) <i>Reflectivity Inversion</i>
0930 -0945	<i>Break</i>
0945 – 1230	Advanced Seismic Inversion Techniques <i>AVO Inversion • Full Waveform Inversion • Joint Inversion</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Seismic Inversion for Rock Property Estimation <i>Estimating Subsurface Rock Properties Using Seismic Inversion • Integration of Well Log Data in Seismic Inversion</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Seismic Inversion for Fluid Property Estimation <i>Estimating Subsurface Fluid Properties Using Seismic Inversion</i>
0830 - 0930	Seismic Inversion for Fluid Property Estimation (cont'd) <i>Applications of Fluid Property Estimation in Hydrocarbon Exploration & Production</i>
0930 – 0945	<i>Break</i>
0945 – 1230	Seismic Inversion for Geological Structure Analysis <i>Estimating Subsurface Geological Structures Using Seismic Inversion</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Seismic Inversion for Geological Structure Analysis (cont'd) <i>Estimating Subsurface Geological Structures Using Seismic Inversion (cont'd)</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0830	Seismic Inversion for Geological Structure Analysis <i>Applications of Geological Structure Analysis in Hydrocarbon Exploration & Production</i>
0830 - 0930	Seismic Inversion for Geological Structure Analysis (cont'd) <i>Applications of Geological Structure Analysis in Hydrocarbon Exploration & Production</i>
0930 – 0945	<i>Break</i>
0945 – 1230	Seismic Inversion for Reservoir Characterization <i>Estimating Subsurface Reservoir Properties Using Seismic Inversion</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Seismic Inversion for Reservoir Characterization (cont'd) <i>Estimating Subsurface Reservoir Properties Using Seismic Inversion (cont'd)</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 – 0830	Seismic Inversion for Reservoir Characterization (cont'd) <i>Integration of Seismic Inversion with Other Geophysical & Geological Data for Reservoir Characterization</i>
0830 - 0930	Seismic Inversion for Reservoir Characterization (cont'd) <i>Integration of Seismic Inversion with Other Geophysical & Geological Data for Reservoir Characterization (cont'd)</i>
0930 – 0945	<i>Break</i>
0945 – 1145	Case Studies & Hands-On Exercises <i>Case Studies on Seismic Inversion in Various Geological Settings • Hands- On Exercises Using Seismic Inversion Techniques to Estimate Subsurface Properties</i>
1145 - 1230	Case Studies & Hands-On Exercises (cont'd) <i>Hands- On Exercises Using Seismic Inversion Techniques to Estimate Subsurface Properties</i>
1230 - 1245	<i>Break</i>
1245 – 1400	Conclusion & Wrap Up <i>Review of Key Concepts & Topics Covered in the Course • Discussion of the Best Practices & Limitations of Seismic Inversion Techniques</i>
1400 – 1415	POST TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

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



Course Coordinator

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