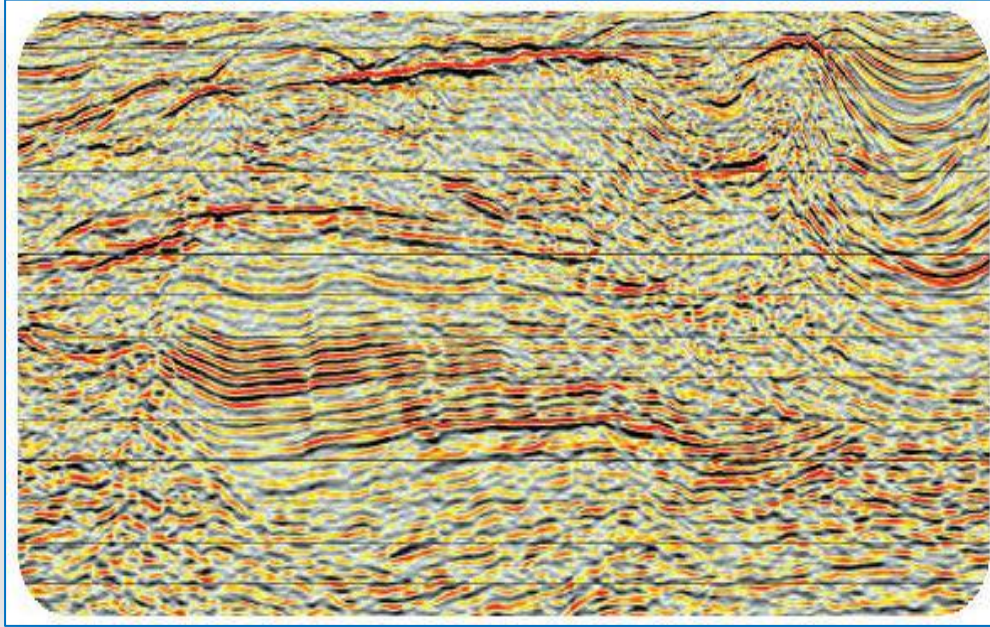




المركز العالمي للتدريب والتطوير  
International Centre For Training & Development



# DE140

## Advanced Seismic Data Acquisition and Processing



**ACTVET**  
Rbu Dhabi Centre for  
Technical and Vocational  
Education and Training  
مركز أبوظبي  
للمعالم والتدريب  
التقني والمهني

**GInI** GLOBAL  
INNOVATION  
INSTITUTE  
Authorized Innovation Provider\*

**PM** Project  
Management  
Institute  
Registered  
Education  
Provider



International Association  
for Health and Occupational Safety  
and the Environment

**EFQM**  
Member



## Course Introduction:

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This course will cover both seismic acquisition procedures as well as data processing methodologies in application to various complex environments and case studies. They will learn the tools available in the industry to ensure quality control on the conduct of the survey and the type of data acquired. Theories will be presented along with practical exercises on situational cases in application of the core skills of data acquisition. Delegates will also learn about the best practices and the new technologies available for seismic data acquisition and how this can be applied to their own operations.

Participants will be able to choose an optimal processing workflow with interrelated processing steps and parameters, all impacting the resulting data quality, cost and time to delivery. They will gain a sound knowledge of processing theory and current best practices in data processing. Specialized cases of various complex environments will be provided. Advanced processing methods focus on specialized studies involving data integration of geological details, well logging data, and petrophysical data. All steps in the workflow are discussed with an eye to the theoretical foundation, alternative implementations, assumptions, strengths and weaknesses, critical parameter choices and QC aspects. They will have the basic knowledge to execute a seismic processing project under experienced supervision. They can entertain a meaningful dialogue with contractors to select an optimal processing flow and parameters, and can exercise basic QC. Participants can better liaise and collaborate with staff in neighboring Geoscience sub-disciplines to better relay data information.

## Course Objectives:

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**Upon successful completion of this course, the delegates will be able to:**

- ✓ Understand the mechanisms of data acquisition in order to supervise or advise on the workflow execution and surveying methodology
- ✓ Ensure quality assurance and quality control either as a supervising authority of the acquisition method or as an end user of the data sets
- ✓ Calculate the value of a seismic survey and the value of information (vs. how much you are willing to spend on new seismic information)
- ✓ Gain a working understanding of a representative set of processing methods, which they may supervise or carryout themselves
- ✓ Accountable for the geophysical input for multi-disciplinary teams
- ✓ Understand the principles, practices, and limitations of seismic data acquisition and processing

# Who Should Attend?

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This course is intended for all Exploration Geophysicists and Geologists involved in seismic acquisition and processing. Good processing is an integrated effort so the course is also targeted at those who contribute to the processing workflow and parameter selection, be it hands-on or in supervising processing done by others. Exploration Geophysicists/ Geoscientists, Exploration Geologists (Seismic Interpretation) and Seismic Interpreters & Geomodellers (End Users)

## Course Outline:

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### Day 1:

#### **KEY PRINCIPLES IN DATA ACQUISITION**

- Foundation Principles in Data Acquisition
- Quality Assurance & Quality Control of Data
- Surveying Best Practices
- Sources, Detectors, and Instruments
- Exercise: Wave Propagation (Snellius, Huygens, Fermat), Data Aliasing in Time

### Day 2:

#### **SURVEY DESIGN & EXECUTION**

- Survey Design & Execution
- Repeatability and Efficiency (OBS Methods, Cost Aspects, Multi-Streamers, Surveying Optimization Methods)

### Day 3:

#### **DATA PREPARATION & PRE-PROCESSING**

- Overall Workflow of Data Processing
- Problems and Remedies to Data Pre-Processing
- Developments in Data Acquisition Geometries & Hardware

### Day 4:

#### **ADVANCED DATA PROCESSING**

- Velocity Analysis
- Anisotropy
- Velocity Model Building and Updating using Time and Depth Migration
- Novel Migration Solutions
- AVO (Amplitude vs Offset) and AVA (Amplitude vs Angle)
- Inversion Methods

### Day 5:

#### **DATA PROCESSING & INTERPRETATION**

- Workflow from Data Processing to Interpretation
- Case Study Discussions

## **Course Certificate:**

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**International Center for Training & Development (ICTD)** will award an internationally recognized certificate(s) for each delegate on completion of training.

## **Course Methodology:**

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**A variety of methodologies will be used during the course that includes:**

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

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## **Course Fees:**

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**To be advised as per the course location.** This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

## **Course Timings:**

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#### **Daily Course Timings:**

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session