2D and 3D Seismic Interpretation Training Course

Professional Development Training Course Outline

Category	Structural Engineering	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

This comprehensive course provides an immersive and practical introduction to **2D and 3D seismic data interpretation**, a critical skill for modern **geoscientists**. You'll learn to unlock the secrets of the subsurface, using **advanced seismic workflows** to identify and delineate geological structures, stratigraphy, and potential hydrocarbon reservoirs. The training emphasizes **real-world case studies** and **hands-on exercises** using industry-standard software to build competence in **seismic data analysis**, **prospect evaluation**, and **risk assessment** within the **energy sector**.

2D and 3D Seismic Interpretation Training Course is designed to bridge the gap between theoretical knowledge and practical application. We'll cover everything from the fundamentals of **seismic acquisition** and **processing** to the latest **quantitative interpretation** techniques. By the end of this course, participants will be able to perform detailed **structural and stratigraphic interpretation**, apply cutting-edge **seismic attributes**, and confidently contribute to **geological modeling** and **subsurface characterization** projects. The skills acquired are directly applicable to **oil and gas exploration**, **carbon capture, utilization, and storage (CCUS)**, and **geothermal energy** sectors.

Programme Curriculum

2D and 3D Seismic Interpretation Training Course

Introduction

This comprehensive course provides an immersive and practical introduction to **2D and 3D seismic data interpretation**, a critical skill for modern **geoscientists**. You'll learn to unlock the secrets of the subsurface, using **advanced seismic workflows** to identify and delineate geological structures, stratigraphy, and potential hydrocarbon reservoirs. The training emphasizes **real-world case studies** and **hands-on exercises** using industry-standard software to build competence in **seismic data analysis**, **prospect evaluation**, and **risk assessment** within the **energy sector**.

2D and 3D Seismic Interpretation Training Course is designed to bridge the gap between theoretical knowledge and practical application. We'll cover everything from the fundamentals of **seismic acquisition** and **processing** to the latest **quantitative interpretation** techniques. By the end of this course, participants will be able to perform detailed **structural and stratigraphic interpretation**, apply cutting-edge **seismic attributes**, and confidently contribute to **geological modeling** and **subsurface characterization** projects. The skills acquired are directly applicable to **oil and gas exploration**, **carbon capture, utilization, and storage (CCUS)**, and **geothermal energy** sectors.

Course Duration

5 days

Course Objectives

1. Master 2D & 3D seismic interpretation fundamentals.
2. Apply advanced seismic attributes for reservoir characterization.
3. Perform accurate structural and stratigraphic interpretation.
4. Integrate seismic data with well logs and geological models.
5. Develop robust seismic workflows for prospect generation.
6. Evaluate hydrocarbon potential and reduce exploration risk.
7. Utilize quantitative interpretation techniques like AVO and inversion.
8. Leverage AI and machine learning in seismic data analysis.
9. Analyze seismic data for unconventional and conventional reservoirs.
10. Interpret complex geological settings (e.g., salt tectonics, thrust belts).
11. Conduct seismic time-to-depth conversion for accurate mapping.
12. Apply seismic for CCUS, geothermal, and mineral exploration.
13. Communicate interpretation results and uncertainties effectively.

Target Audience

1. Geophysicists
2. Geologists
3. Reservoir Engineers
4. Petroleum Engineers
5. Asset Managers
6. Exploration Managers
7. New-hire Geoscientists
8. Academics & Students

Course Modules

Module 1: Seismic Fundamentals & Data QC

- Principles of seismic reflection and wave propagation.
- Understanding seismic data acquisition (land, marine, transition zone).
- Overview of seismic data processing and its impact on interpretation.
- Seismic-to-well tie and synthetic seismogram generation.
- **Case Study: 2D Seismic reprocessing from the Neuqu??n Basin, Argentina.** This case study demonstrates how reprocessing older 2D data can create a pseudo-3D volume, allowing for a modern interpretation and prospect evaluation in environmentally sensitive areas.

Module 2: Structural Interpretation

- Identifying and mapping faults and folds on seismic sections.
- Interpreting different structural styles (e.g., extensional, compressional).
- Fault seal analysis and trap identification.
- Gridding and mapping techniques for 2D and 3D data.
- Identifying subtle structural traps and features.

Module 3: Stratigraphic Interpretation

- Fundamentals of seismic stratigraphy and facies analysis.
- Interpreting stratal terminations and depositional environments.
- Identifying seismic facies and their geological significance.
- Applying principles of sequence stratigraphy to seismic data.
- Identifying stratigraphic traps and pinch-outs.

Module 4: Advanced Seismic Attributes

- Introduction to seismic attributes (e.g., coherence, curvature, RMS amplitude).
- Selecting and applying appropriate attributes for specific geological problems.
- Using attributes for fault detection, channel delineation, and geobody identification.
- Multi-attribute analysis and classification.
- Visualizing attributes on horizon and time slices.

Module 5: Quantitative Interpretation

- Principles of AVO (Amplitude Variation with Offset) analysis.
- Seismic inversion techniques (acoustic impedance, elastic inversion).
- Using quantitative data to predict rock and fluid properties.
- Integrating rock physics with seismic data for lithology and fluid discrimination.
- **Case Study: 3D Seismic Inversion in the Ouachita Mountains, Oklahoma.** This case study highlights how quantitative interpretation, including acoustic impedance and Lam?? parameters, was used to characterize Morrowan-age sandstone reservoirs and identify new gas compartments that were previously missed by conventional interpretation.

Module 6: Time-to-Depth Conversion & Volumetrics

- Velocity model building and its importance in depth conversion.
- Methods for time-to-depth conversion (e.g., well-based, horizon-based).
- Assessing and managing velocity uncertainty.
- Calculating hydrocarbon volumes (gross rock volume, net pay).
- Probabilistic volumetric analysis (P10, P50, P90).

Module 7: Modern Workflows & Technology

- Integrating seismic data with well logs and core data.
- Automated fault detection and horizon picking using AI/ML.
- Introduction to 4D seismic for reservoir monitoring.
- Best practices for project management and data management.
- Leveraging cloud computing for large-scale interpretation projects.

Module 8: Beyond Hydrocarbons

- Using seismic for Carbon Capture, Utilization, and Storage (CCUS) projects.
- Applying seismic data for geothermal energy exploration.
- Near-surface seismic applications (e.g., civil engineering, mining).
- Risk assessment for non-hydrocarbon seismic projects.
- The future of seismic: new technologies and emerging applications.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com