

Advanced Seismic Attributes

Course Duration : 5 days

Date : January 12, 2026 to January 16, 2026

Location : Milan

Type of Participant : This course is intended for geophysicists, geologists, petrophysicists, reservoir engineers, exploration and production professionals, as well as technical staff who support geoscience and reservoir teams and wish to enhance their knowledge and application of seismic attributes in subsurface interpretation and reservoir characterization.

Summary:

This advanced and highly interactive course provides participants with an in-depth understanding of seismic attributes and their application in hydrocarbon exploration and reservoir characterization. The program covers theoretical principles, practical workflows, and interpretation techniques, enabling participants to utilize seismic attributes as powerful tools for subsurface evaluation.

Participants will gain insights into various seismic attribute categories, their extraction methods, and how they can be integrated with well and geological data to improve reservoir understanding, reduce uncertainty, and support decision-making in exploration and production.

Objective:

Upon successful completion of this course, participants will be able to:

- Develop a comprehensive understanding of seismic attributes and their role in subsurface interpretation.
- Differentiate between geometric, kinematic, dynamic, and spectral



attributes and recognize their applications.

- Apply seismic attributes for fault and fracture detection, stratigraphic analysis, and reservoir characterization.
- Correlate seismic attributes with rock and fluid properties for improved hydrocarbon prediction.
- Integrate seismic attribute analysis with well log and geological data to enhance interpretation reliability.
- Evaluate the limitations, pitfalls, and best practices in attribute selection and application.
- Apply advanced workflows for multi-attribute analysis and visualization.
- Use seismic attributes for prospect generation, risk assessment, and field development planning.

Contents:

Module 1 – Fundamentals of Seismic Attributes

- Introduction to seismic attributes: definitions and classifications
- Categories of attributes: geometric, kinematic, dynamic, and spectral
- The role of seismic attributes in exploration and production
- Common pitfalls and misconceptions in attribute analysis

Module 2 – Geometric and Structural Attributes

- Amplitude, phase, and frequency attributes
- Coherency and similarity attributes for fault and fracture detection
- Dip, azimuth, and curvature attributes for structural interpretation
- Case studies: fault and fracture network mapping

Module 3 – Stratigraphic and Lithological Attributes

- RMS amplitude, sweetness, and envelope attributes
- Spectral decomposition and frequency-based analysis
- Identifying channels, reefs, and depositional features
- Seismic geomorphology applications



Module 4 – Reservoir Characterization with Attributes

- Amplitude variation with offset (AVO) and fluid indicators
- Seismic inversion concepts (without software workflows)
- Attribute correlation with well logs and rock physics
- Integration of seismic attributes with reservoir properties

Module 5 – Advanced Applications and Multi-Attribute Analysis

- Cross-plotting and attribute clustering techniques
- Multi-attribute integration workflows
- Visualization and interpretation best practices
- Case studies from exploration and field development projects
- Emerging trends in seismic attribute analysis

Training Methodology:

The course combines lectures, case studies, group discussions, and practical interpretation exercises. Real-world datasets and examples will be utilized to ensure knowledge transfer and practical application.

- **40% Lectures & Conceptual Discussions**
- **30% Practical Exercises & Case Studies**
- **20% Group Work & Problem-Solving Sessions**
- **10% Videos & Industry Examples**

