Seismic Attributes and Pre-Stack Inversion Tools for Characterizing Unconventional Reservoirs

(4-day course conducted on Nautilus platform)

Participants will develop the skills required to review, select and interpret the range of seismic attributes and pre-stack inversion tools available for the characterization of unconventional reservoirs including tight sandstones and shales.

Learning Outcomes

After attending this course the participants will be able to:

1. Synthesize the various rock physics measurements for unconventional reservoirs that may be estimated from seismic data.
2. Evaluate petrophysical variations in shales, oil sands, and tight sands observed in calibration wells and be able to predict observable differences in the expected seismic response
3. Assess the influence of tectonic stress history and also the importance of rock properties such as brittleness on reservoir performance.
4. Select appropriate seismic attributes (amplitude, azimuthal anisotropy measurements, AVO, acoustic impedance, elastic impedance, curvature, coherence etc.) expected to be useful predictors of enhanced reservoir performance.
5. Construct rose-diagrams from seismic attributes that can be used to study structural orientations and stress fields.
6. Assess the relevance of seismic inversion measurements such as Lambda-Rho, Mu-Rho, Young's modulus and Poisson's Ratio that might be helpful to engineers in well planning and reservoir stimulation design.

Who should attend?

Geoscientists, processing geophysicists, and engineers having an understanding of the fundamental principles of the seismic method, with a minimum of one year's experience interpreting seismic data, and who are interested in learning more about the application of seismic attributes to characterize unconventional reservoirs.