



Introductory 1-day Course

Basic Background Geology

- Composition of the earth and crustal rock types
- Sedimentary basins - the "Layer Cake" model
- Some basic structures in a sedimentary basin
- Fluid migration and hydrocarbon traps
- Typical hydrocarbon traps

The Fundamental Seismic Principle

- Average velocity, the time-distance translator
- Modes of acoustic energy propagation
 - P-Waves, Shear Waves, Raleigh Waves, Others
- Rock properties
 - Interval velocity, density, Poisson's ratio
- Propagation of a P-Wave
- A simple seismic experiment
 - A basic reflection model
 - Effect of wavelet length and signal to noise ratio

Basic Signal Theory

- Properties of a cosine wave
- Fourier decomposition, the effect of phase
- The effect of amplitude
- principles of filtering

Resolution and Bandwidth

- Simple wedge model – variable bandwidth
- Simple wedge model – variable phase
- Simple wedge model – variable signal/noise ratio

Energy Loss Mechanisms

- Reflection coefficients and transmission losses
- Spherical divergence
- Absorption
- Mode conversion and energy partition