

Seismic Wave and Ray Theory (3 credit hours): Fundamental concepts and foundations of wave and ray theory necessary for seismic processing, imaging, AVO analysis and structural interpretation.

Course Outline

1. Elasticity theory, the wave equation, body waves.
2. Partitioning at an interface, reflection at non-normal incidence (AVO), reflection geometry and wave path curvature.
3. Surface waves, scattering theory, attenuation and velocity, diffraction
4. Head waves, events and noise, resolution, wavelet shape, near surface properties.
5. S-waves and C-waves
6. Anisotropy
7. Wave theory concepts in processing, migration and imaging.
8. Earthquake waves