



## RokDoc v5.3® Software Training Course Outline

### RokDoc

- **What is RokDoc**
- **Introduction to Rock Physics**
  - What is Rock Physics?
  - A RokDoc Workflow
  
- **Workflow 1 - Project Management**
  
- **Introduction to Project level data**
  - Averages
  - Minerals Sets
  - Fluids Sets
  - Working intervals
  
- **Introduction to Well level data**
  - Vp-Vs-Rho Sets
  - Log Sets (Mineral & Fluid)
  - Volume Fraction Sets
  - Saturation Sets
  
- **Workflow 2 – Importing Well Data**
  - Well LAS loading
  - Markers – and creating WI's
  - Positions and deviation surveys
  - Checkshots
  
- **Workflow 3 - Well Viewer**
  - General right-click options (Project map view and Well viewer)
  - Colours (Display options)
  - Mouse actions (Display options)
  - Creating and using well Views
  
- **Workflow 4 – Basic Cross-plotting for Data QC**
  - Data QC in crossplotter. Using trend lines and rock physics models.

- Cross-plot log editing and data conditioning. Deriving project specific relationships and trend lines and equations.
- **Rock physics essentials**
  - Data acquisition
  - Seismic essentials
  - Elastic properties and moduli
  - Density and  $V_s$  prediction
- **Introduction to the Log Calculator**
  - Basic functionality
- **Introduction to the Log Programmer**
  - Basic functionality
- **Workflow 5 –  $V_s$  Prediction**
  - Bulk Rock Properties - Minerals and Fluids
    - Creating Volume sets – Assign mineral properties and normalise VSh curves.
    - Creating Saturation sets
  - $V_s$  Prediction
    - How to use defaults
      - Empirical methods
      - Greenberg Castagna method for water saturated rocks.
      - Calibration technique for measured shear data.
      - $V_p$ - $V_s$ -Rho Sets
  - $V_s$  calibration
  - Case study
- **Workflow 6 – Deriving Averages**
  - Deriving averages for use in single interface models
  - Using working intervals and cut-offs to derive averages.
- **Workflow 7 – Blocky Operations – AVO and Gassmann Fluid Substitution**
  - **AVO**
    - Karl Zoeppritz
    - AVO principles

- Blocky AVO single-interface model
- **Gassmann Fluid Substitution**
  - Principles
  - Fluid and mineral mixing
  - Elastic Bounds
  - Empirical relationships
  - Limitations
  - Performing blocky fluid substitutions in RokDoc
  - QC Plots
- **Workflow 8 – Gassmann Log Fluid Substitution**
  - Shaley Sand Gassmann – Dry Rock Modelling
  - Standard Gassmann
- **Workflow 9 – AVO attribute analysis**
  - Fluid effects
  - Elastic contrast analyser
- **Workflow 10 – Domain Transformations**
  - **MD-TVDSS**
    - Deviation/position surveys
    - QC'ing deviation trajectories
  - **TVDSS-TWT**
    - Using Checkshots
    - Using the drift curve and calculating VCalibrated
- **Workflow 11 – Synthetic Gathers Log Elastic Properties and Log Filtering**
  - **Log AVO**
    - Synthetic gather generation
    - Gather manipulation
    - Gather Analysis
  - **Log elastic properties**
    - Angle dependent properties
    - Angle independent properties
    - Log Filtering
- **Workflow 12 – Advanced Cross-plotting**
  - Matrix cross-plotting

- Single-well and multi-well cross-plotting
- Trend Lines and Overlays
- Data discrimination and using the histograms
- Inversion Feasibility studies
- Weighted stack cross plotting
  - Projection and weighted stacks
  
- **Workflow 13 – Blocky Anisotropy (Optional)**
  - Computational
  - Fluid Substitution
  - Derived Methods
  - Database
  - Plane Waves
  - AVO
  
- **Workflow 14 – Log Anisotropy (Optional)**
  
- **Workflow 15 – Loading and viewing seismic**
  - Reading SEG Y files
  - Inline and Crossline Viewers
  - Viewing time slices
  
- **Workflow 16 – Roy White Wavelet Extraction**
  - QC'ing extraction location – PEP maps and correlation lag
  - QC'ing wavelets
  - Synthetic gathers
  - A case study

## RokDoc-2D<sup>®</sup>

- **Introduction to 2D**
  - Resolution, interference and tuning
  - Bright, flat and dim spots
  - Navigating in RokDoc-2D
  
- **Workflow 1 – Tuning Model**
  - Creating and filling bodies
  - Manipulating model parameters

- Measuring attributes
- Changing body properties
  
- **Workflow 2 – Anticline Model**
  - Creating models to conceptualize hypotheses
  - Creating new bodies and geometries
  - Fluid substitution
  - Wavelet frequency and offset variation
  - Elastic impedance
  - Pseudo wells
  
- **Workflow 3 – One Well Layer Cake Model**
  - Filling the model
  - Wavelet/filter frequency variation
  - Fluid effects
  - Porosity effects
  - Noise effects
  
- **Workflow 4 – Model from Seismic**
  - Populating the model
  - Interpreting events
  - 'Matching' to seismic
  - Calculator
  
- **Workflow 5 – Multi-Well Model from Seismic Backdrop**
  - Using more than one well
  - Importing backdrops
  - Re-positioning wells
  - Digitising geologically consistent events
  - Perturbing the model
  
- **Workflow 6 – Anisotropy (Optional)**
  - Building the model
  - VTI Anisotropy
  - HTI Anisotropy
  
- **Rock physics case study**