01: Critical porosity model and Gassmann Fluid substitution:

- Nur's cirtical porosity model
- Gassmann's relations (GS)
- Assumptions and Imitations of GS

02: Effective Elastic Media: Bounds:

- Voigt and Reuss Bounds
- Voigt–Reuss–Hill Average Moduli Estimate
- Hashin-Shtrikmann bounds
- In comparision to Nur's cirtical porosity model

03: Effective Medium (EM) theory 1: Inclusion models:

- Non-interacting EM model with spherical pores
- Self-Consistent(SC) EM model with spherical pores
- Non-interacting crack model
- Self-consistent crack model
- The assumption and limitation of these models

04: Effective Medium (EM) theory 2: Contact models :

- Hertz-Mindlin approach
- Reduced shear factor
- Walton's model
- Assumptions and limitations of each model

05: Fluid parameter estimation:

- Batzle and Wang fluid parameter estimation

06: Anisotropy:

- Thomsen parameters
- Weak anistropic approximation of phase velocities
- Backus averaging

07: Quartz cementation modelling:

- Modelling porosity loss due to mechanical compaction
- Modelling porosity loss due to quartz cementation

08: Soft-Sand, Stiff-Sand and Cemented sand models :

- Soft-sand model
- Stiff-sand model
- Contact cement model
- Constant cement model
- Increasing cement model
- Rock physics diagnostic approach

09: Shaly Sand modeling:

- Thomas–Stieber–Yin–Marion Model for Sand–Shale Systems
- Net-to-gross ratio
- Yin–Marion–Dvorkin–Gutierrez–Avseth Elastic Model

10: Rock Physics Template (RPT):

- Rock physics template created from different models

11: Differential Effective Medium (DEM):

- Berrymann's differential effective medium formulation

12: Amplitute versus Offset (AVO):

- Zeoppritz Equation
- Aki-Richard approximation to Zeoppritz Equation
- Intercept and gradient