



TECT
GEOLOGICAL CONSULTING

STRUCTURAL GEOLOGY

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MODULE ONE: Introduction and General Concepts

- Basic concepts
- How to tackle a structural analysis
- The Earth
- Tectonic settings
- Basic structural geometries

MODULE TWO: Fabrics and Strain

- Processes inducing or affecting microstructure
- Introduction to fabrics
- Introduction to strain
- Rotational vs. non-rotational strain
- Incremental or infinitesimal strain

MODULE THREE: Rock Stability and Mohr Diagrams

- Rock stability in the frictional regime
- Stress vs strain
- Mohr diagram

MODULE FOUR: Cataclasis and Rheology

- Effects of various parameters on frictional sliding

MODULE FIVE: Application to Ore Fluids

- Fluid flow
- Faults and shear zones as fluid conduits
- Source of fluids
- Hydrofracturing and fracture permeability
- Disruption of permeability
- Effective stress
- Fluid pressure and fault stability
- Andersonian-type faults and veining

MODULE SIX: Application to Ore Fluids (contd.)

- The earthquake shear stress cycle
- Disruption of permeability – pumps and valves
- Suction pumps
- Fault valve model
- “Misoriented” faults
- Significance for exploration
- Mineral and Au deposition
- Hydraulic brecciation

MODULE SEVEN: Application to Petroleum Systems

- Fluid densities
- Static pressure gradients
- Abnormal pressures and their generation
- Overpressure vs underpressure
- Regional overpressure
- Local overpressure
- The oil window

MODULE EIGHT: Mylonite Zones/Ductile Shear Zones/Shear Zones

- Ductile deformation
- Plasticity
- Cumulative strain
- Stress-strain relationships
- Dislocation creep
- Hardening and softening

MODULE NINE: Mylonite Zones/Ductile Shear Zones/Shear Zones

- Diffusion creep
- Ductile grain-boundary sliding
- Superplasticity
- Recovery and crystallization
- Deformation mechanism maps
- Shear criteria
- Textures in mylonites

MODULE TEN: SPO, CPO and LPO Fabrics

- Experimental deformation of quartz
- Mechanisms of texture development:
 - Rigid body rotation
 - Piezo-recrystallization
 - Dislocation glide
- Phenomenological models of texture evolution
- Evolutionary model of texture evolution