Applied CCS Geomechanics

APES ENERGY EVOLUTION & EJ Geomechanics

Course Overview

The outline of the comprehensive programme is:

- Introduction to rock mechanics and rock mechanics testing
- Pore pressure and in-situ stresses
- Construction of 1D and 3D geomechanical models
- Wellbore geomechanics including wellbore stability and sand production
- Hydraulic fracturing, and compaction/expansion and subsidence/uplift
- Reservoir geomechanics associate with CO2 geological storage
- Geomechanical risks in CO2 geological storage
- Analytical geomechanical containment risks evaluation
- Coupled geomechanical-dynamic-thermal modelling on containment risks
- Geomechanics-related risk consequence, mitigation control, and inherent and residual risks

Course Objectives

Participants' acquisition of improved knowledge competency at intermediate level in CCS Geomechanics, and the practical application of acquired knowledge in real-world scenarios via latest technology case studies. The key aim is to promote knowledge transfer on the advanced technical subject with relevancy in role-specific skills development and transformative impact of geomechanics throughout Carbon storage development planning and successful delivery of CCS projects.

Day 1 – Rock Mechanics Fundamentals & Pore Pressure

- Introduction to Rock Mechanics
- Rock Mechanics Testing & CO_2–Rock Interaction
- Pore Pressure and Fracture Gradient

Day 2 – In-Situ Stress & Geomechanical Model Development

- Pore Pressure (Major Exercise)
- In-Situ Stresses
- 1D & 3D Geomechanical Models
- 1D Geomechanical Model (Major Exercise)

Day 3 – Wellbore, Sanding, Fracturing & Compaction

- Wellbore Geomechanics and Stability
- Sand Production and Mitigation
- Hydraulic Fracturing in Intact & Fractured Formations
- 1D Compaction and Subsidence Prediction
- Wellbore Stability (Major Exercise)

Day 4 – CO_2 Storage Geomechanics & Containment Risk

- Reservoir Geomechanics for CO_2 Storage
- Geomechanical Risks in CO_2 Geological Storage
- Analytical Geomechanical Containment Risk Evaluation

Day 5 – Coupled Modelling & Risk Management

- Analytical Containment Risk Evaluation (Major Exercise)
- Coupled Geomechanical–Dynamic–Thermal Modelling
- Geomechanics Risk Consequence, Mitigation & Control

Progress Tracking

Full course administration and participant tracking are included. Weekly progress updates provide clear visibility into participation, engagement, and overall progress.

Queries

Connect with enquiries@apes-energyevolution.com