

Petrogenium. Academy

Upstream (Geology)

Applied Structural Geology and in Hydrocarbon Systems Analysis

Consultant / Trainer

Tim Needham



The **Petrogenium** (in collaboration with EPTS) **Applied Structural Geology and in Hydrocarbon Systems Analysis** course will provide participants with the skills to optimize both exploration lead evaluation and reservoir development with respect to structural complexities in hydrocarbon reservoirs such as structural geometries, conduits and seals. The participants will be introduced to the main elements of geo-mechanics, which then serve as a basis to understand structural geometries and kinematics. Case histories still provide good illustration materials as it helps understanding mechanics and tectonics.



Participants

This **Petrogenium**. course is aimed at Exploration and Development Geologists, Geophysicists and Petroleum Engineers working on the development of hydrocarbons in areas with (complex) tectonic regimes.



Learning Objectives

At the end of the course participants will have gained insight into the main geochemical concepts, tools, and application domains. They will understand how geochemistry can contribute to solving exploration and production problems. Exercises are used to reinforcing the acquired knowledge in a practical context. The participants will be able to apply basic geochemical tools, and will be in a position to define and manage geochemical projects.

Programme

DAY 1

- Introduction: to petroleum systems
- The role of structures in petroleum systems
- To create a 'common ground' in the group, the first day will contain fundamental aspects of structural geology and geo-mechanics and the application of this subject to general geological phenomena as encountered in the oil and gas business.

DAY 2

- Diapirs and associated structures
- Fault sealing and top seal integrity. Structural reservoir types and fault sealing mechanisms for all tectonic regimes will be part of the material.
- Aspects of salt-tectonics will be discussed during the morning of day-4. Examples from the North Sea and the Gulf of Mexico, interpretation exercise. This session will be used to discuss fault sealing mechanisms and approaches to evaluate top seal integrity in exploration and in production scenarios.

DAY 3

- Compressional tectonics: fold-and-thrust belts
- Compressional tectonics: fault reactivation - multi-phase tectonics
- Theory, case histories, analogue models, seismic interpretation exercise.
- Pore pressure prediction and overpressure generation mechanisms
- Structural geometries and fault properties that are characteristic for compressional tectonic regimes will be treated during Day 3.
- The mechanics of fault reactivation (inversion tectonics) will be discussed.

DAY 4

- Extensional tectonics: rifts, delta's, domes and associated sedimentation patterns.
- Theory, examples, analogue models, structural geometries and fault properties that are characteristic for extensional tectonic regimes will be covered during Day-2. Structural reservoir types and fault sealing mechanisms will be part of the material.
- Strike-slip tectonics. Theory, case history, analogue models, seismic interpretation. Structural geometries and faults characteristic of strike-slip tectonic regimes will be covered. The 3D nature of this tectonic setting including pitfalls and traps in structural interpretation will receive special attention

DAY 5

- Fracture systems: fracture mechanics, reservoir examples and outcrop examples
- Analysis of fault and fracture systems, including fractal properties of fault and fractures and prediction of sub-seismic faults.
- Theory, case histories, analogue models. Fracture mechanics, fracture types, natural fracture systems and their influence on reservoir characteristics and production strategies will be discussed.
- Course summary..

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com

Website: <https://www.petrogenium.com/training/>

Because Experience Matters