Petroleum System Modelling and Resource Assessment

Course Price

£3050

Course Description

This course discusses the creation of hydrocarbon and its volume assessment using petroleum system models. Understanding of these models is vital for geoscientists and engineers involved in today’s challenging conventional and unconventional exploration and development projects.

The elements of the Petroleum System Charge, Trap, and Reservoir, are described systematically within the framework of play and prospect evaluation. In addition, the processes of generation, migration, accumulation and preservation of petroleum resources are reviewed.

Petroleum system modelling simulates the hydrocarbon-generation process to calculate the charge, or the volume of hydrocarbons available for entrapment, as well as the fluid flow, to predict the volumes and locations of accumulations and their properties.

Petroleum systems modelling workflow to integrate all the geological elements and processes that are fundamental to the evaluation of petroleum system is showed in detail. Petroleum Systems Models in 1, 2 or 3D and their use and importance is discussed.

Course Objectives

• Understand Petroleum System concepts and resource volume estimation methods
• Analyze elements and processes of petroleum system generation
• Assess the data requirement for the petroleum system modelling
• Understand the Petroleum System controls on reservoir rock quality
• Describe various basin modelling techniques and their uses
• Assess the prospect value by estimating the quantity and predicting the quality of trapped hydrocarbon

Who Should Attend

Geologists, geophysicists, and petrophysicists working on basin, play, prospect or reservoir evaluation.
Course Content

Day 1
Introduction to petroleum system modelling
• Petroleum system concept
• Petroleum system elements and process
• Play fairway analysis
• 1D/2D/3D models

Day 2
Burial history analysis
• Plate Tectonics and Sedimentary basins
• Depositional environments
• Sequence stratigraphy
• Sedimentary loading and compaction
• Tectonic subsidence
• Burial history modelling

Day 3
Pressure and fluid flow modelling
• Effective stress and permeability
• Overpressure mechanisms
• Geopressure prediction methods
• Fracture gradient prediction

Day 4
Hydrocarbon generation, migration, entrapment and preservation
• Source rock parameters
• Heat flow and HC generation
• Primary and secondary migration from source to trap
• Trap geometries that govern accumulation
• Reservoir filling and its control on fluid phase saturation
• Phase effect

Day 5
Petroleum system modelling
• Data requirement
• Modelling workflow
• Results
• Volume estimation
• Resource reporting
• Unconventionals

CPD Unit

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