Basin Analysis

Course Duration	:	5 Days
Date	:	16-Sep-2024 to 20-Sep-2024
Location	:	Vienna, Austria
Type of Participant	:	This training course is designed for and will greatly benefit Geoscientists involved in Petroleum Systems Modeling and anyone wanting to know more about the Petroleum Systems Modeling approach.

Summary:

The quality of a numeric computer model is highly dependent on the quality of the input data.

This 5-day course covers the key aspects of **basin analysis and subsequent basin and petroleum systems modeling** from input to output. We will discuss basin evolution beginning with plate tectonics, all the way to petroleum generation and migration. We will look at how risks and uncertainties influence our understanding of the petroleum systems within a basin and how we can quantify those uncertainties.

The aim of this course is to provide the basic geoscience background needed by anyone engaged in Petroleum Systems Modeling.

Attendees will learn what kinds of questions to ask, what kind of data is needed to build models and solve particular problems, and apply geological reasoning to quantifying uncertainties.

Objective:

By the end of this training course, each participant will be able to:

- Undertake their own 1D basin models and be aware of data requirements, calibration and uncertainties
- Systematically assess the evolution of a basin's conventional and unconventional petroleum system criticals through space and time through a practical application of geology, geophysics, and geochemistry
- Deconstruct a basin through space and time and build predictive basin models useful in exploration
- Evaluate the geomechanical fundamentals controlling a basin's burial history through tectonic subsidence analysis
- Determine the thermal history of a basin and its importance upon source maturity dynamics
- Relate organic source quantity and quality to sedimentary processes and environments
- Delineate migration pathways through space and time
- Characterize clastic, carbonate, and unconventional reservoir criticals
- Evaluate seal/trap quality
- Construct and analyze petroleum events chart
- Geovalidate the kinetic model
- Rank and quantify petroleum system risk both deterministically and stochastically using Monte Carlo methods
- Construct and analyze a decision tree with both geologic and economic risk factors
- Classify basins for exploration and development

Daily Program:

Day 1
- Introduction
- PRE-TEST
- Introduction to Sedimentary Basins
- Basin Forming Mechanisms
- Basin Classification and Structural Analysis

Day 2
- Basin Fill
- Sequence Stratigraphy
- Depositional Environments
- Geochemical Analysis

- Organic Matter in Sediments
- Source Rocks
- Geochemical Analysis for Petroleum Exploration

Day 3
- Temperatures in Sedimentary Basins
- Pressure and Compaction
- Heat Flow

Day 4
- Petroleum Systems Modeling
- Hydrocarbon Generation
- Hydrocarbon Migration
- The Petroleum System Approach
- Uncertainty Management and Quantification

Day 5
- Petroleum Systems Modeling
- The Petroleum System Approach
- Uncertainty Management and Quantification
- Course Conclusion
- POST-TEST
- Presentation of Course Certificates