



## Basin Analysis Workshop: An Integrated Approach to the Exploration and Evaluation of Conventional and Unconventional Resources - BA

### COURSE

#### About the Course

Basin analysis, whether for conventional or unconventional resource play analysis, demands an integrated approach from explorationists. It is both inappropriate and misleading to suggest that the tectonic-thermal-sedimentologic evolution of any one basin is an established fact, or even that all basins submit to the same simple and equivocal models. Therefore, this five-day course does not passively present an inventory of basins of the world. Instead, this workshop provides the theory, methods, and active practice for participants to develop and optimize their own individual basin evaluation and modeling modus operandi. Incorporated as practical problems for workshop analysis and substantial team discussion are case histories and new findings from throughout the world utilizing geologic, geophysical, and geochemical data sets. In addition, students construct and interpret their own 1D and 2D basin models using BASINMOD, an industry standard of basin modeling software. One personal computer is provided at additional cost for each participant.

When this course is presented as an in-house two-week format, it builds upon the previous week's material with the added integration of petrophysics and seismic stratigraphy to a more in-depth evaluation of a variety of international plays.

*"I really liked the project at the end that pulled it together for me. I really liked the exercises - it kept me engaged and helped me understand the content."* - Geoscientist, Houston

#### Target Audience

Geoscientists, especially those in New Ventures or in Asset Evaluation, who require a non-superficial but practical application of an integrated variety of state-of-the-art geological/geochemical/geophysical tools for the regional to local evaluation of conventional and unconventional resource plays in sedimentary basins.

#### You Will Learn

Participants will learn how to:

- 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
- Geovaildate 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
- Determine within a basin the optimal stratigraphic and spatial locations for exploring conventional and unconventional resources
- Work in an integrative team to generate and present a prospect from the team's own crafted 2D basin model from both well control and seismic generated virtual wells

## Course Content

### GEOMECHANICAL FUNDAMENTALS

- Wilson Cycle Paradigm
- Dickinson (1974) Basin Types
- The Burial History Curve
- Rheological vs. Compositional Definitions
- Beta and Alpha of Rifting
- Elasticity
- Why Basins Subside/Uplift
- Tectonic Subsidence Analysis

### GEOTHERMAL CRITICALS

- Heat Flow: The Master Parameter
- Geothermal Gradients
- Integrating Heat Flow and Geothermal Gradients

### GEOCHEMICAL CRITICALS

- Quantity (Om)
- Quality (Organofacies)
- Maturity
- Synthesis

## MIGRATION CRITICALS

- Expulsion (Micromigration)
- Migration (Macromigration)
- Remigration
- Pathway Construction Rules
- Pathways as a Function of Basin Elasticity

## RESERVOIR CRITICALS

- Conventional Reservoir Quality, Clastics
- Conventional Reservoir Quality, Carbonates
- Less Conventional Reservoirs
- Unconventional Resource Overview
- Sequence Motifs

## SEAL AND TRAP CRITICALS

- Top Seals (Cap Rock)
- Fault or Lateral Seals
- Permeability
- Seal Thickness
- Seal Lithology
- Pressures and Seal Integrity
- Evaluation of Seal Ductility
- Synthesis

## TIMING CRITICALS

- Revisiting the Basin Classification
- Examples of Kingston's Basin Classification
- Events Chart

## RISK AND DECISION-MAKING

- Basic Concepts
- Petroleum Reserve Definitions
- Stochastic-Deterministic Definitions
- Qualitative Risk Assessment: Georisk
- Quantitative Deterministic

- Quantitative Stochastic Monte Carlo
- Game Theory and Decision Trees

## SUMMARY: THE PETROLEUM SYSTEM AS PRAXIS

### Product Details

Categories: [Upstream](#)

Disciplines: [Geology](#) [Unconventional Resources](#)

Levels: [Intermediate](#)

Product Type: [Course](#)

Formats Available: [In-Classroom](#)

Instructors: [PetroSkills Specialist](#)

### In-Classroom Format

23 Sep '24	27 Sep '24	-		Course		In-Classroom (in Houston)	\$4,810.00
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11 Nov '24	15 Nov '24	-		Course		In-Classroom (in London)	\$5,585.00
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