



External Training Course

Rocks and Fluids SCAL Analysis

From 19 Aug. To 23 Aug. 2024

From 16 Sep. To 20 Sep. 2024

From 07 Oct. To 11 Oct. 2024

Hotel Monterey Ginza, Tokyo, Japan

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External Training Course:

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Fees: 2500 KD

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Course Description

Unlock the mysteries beneath the Earth's surface and master the art of reservoir characterization with our comprehensive "Rocks and Fluids SCAL Analysis" course. Special Core Analysis (SCAL) is the key to understanding the dynamic interplay between rocks and fluids in oil and gas reservoirs, providing critical insights for effective reservoir management. This course takes you on a journey from core sampling to reservoir simulation, equipping you with the knowledge and skills needed to tackle real-world challenges in the petroleum industry.

Course Objectives

Foundational Concepts: Delve into the fundamental principles of SCAL, understanding its role in reservoir engineering, and how it contributes to decision-making in hydrocarbon recovery.

Rock Properties: Explore the intricacies of rocks - from porosity and permeability to capillary pressure and wettability. Learn to decipher core data to unveil the secrets of reservoir formations.

Fluid Properties: Investigate reservoir fluids, their types, and behaviors. PVT analysis and an understanding of phase behavior will be essential components of this exploration.

Core Sampling and Analysis Techniques: Master the art of core sampling, handling, and preservation. Engage in hands-on sessions to analyze core samples and extract valuable data for reservoir characterization.

Capillary Pressure and Relative Permeability: Grasp the significance of capillary pressure and its impact on fluid movement within reservoirs. Learn the art of determining relative permeability and its role in reservoir performance.

Wettability: Uncover the mysteries of wettability and its influence on fluid-rock interactions. Gain insights into measurement techniques and their implications for reservoir behavior.

Integration with Reservoir Simulation: Understand how SCAL data bridges the gap between laboratory analysis and reservoir simulation, leading to more accurate reservoir models and predictions.

Challenges and Best Practices: Navigate through common challenges in SCAL analysis and discover best practices to enhance the reliability of your results.

Course Outline

Module 1: Introduction to SCAL Analysis

- Overview of Special Core Analysis (SCAL).
- Importance of SCAL in Reservoir Engineering.
- Role of SCAL in Reservoir Characterization and Management.

Module 2: Core Sampling and Preparation

- Methods of Core Sampling.
- Core Handling and Preservation Techniques.
- Core Cleaning and Preservation.

Module 3: Basic Rock Properties

- Porosity Measurement Techniques.
- Permeability Measurement Techniques.
- Grain Density and Bulk Density.

Module 4: Fluid Properties

- Reservoir Fluid Types and Compositions.
- Phase Behavior of Hydrocarbons.
- PVT (Pressure-Volume-Temperature) Analysis.

Module 5: Capillary Pressure and Saturation Height

- Capillary Pressure Concepts.
- Saturation Height Functions.
- Laboratory Techniques for Capillary Pressure Measurement.

Module 6: Relative Permeability

- Definition and Importance of Relative Permeability.
- Laboratory Methods for Relative Permeability Measurement.
- Correlation and Interpretation of Relative Permeability Data.

Module 7: Wettability

- Understanding Wettability in Reservoir Rocks.
- Impact of Wettability on Fluid Flow.
- Measurement Techniques for Wettability.

Module 8: SCAL in Reservoir Simulation

- Integration of SCAL Data into Reservoir Models.
- Practical Applications in Reservoir Simulation.

Module 9: Challenges and Uncertainties

- Common Challenges in SCAL Analysis.
- Sources of Uncertainty in Results.
- Mitigation Strategies.

Module 10: Advanced Topics

- Core-Log Integration.
- Core Flooding Experiments.
- Emerging Trends in SCAL Analysis.

Course Details & Agenda:

Day One Agenda

8.30	9.00	Opening Remarks (30 Min.). Dr. Omar Harahsha (Course Coordinator) with Dr. EL HADY ENNAHOUI (Course Trainer).
9.00	11.30	<u>Module 1: Introduction to SCAL Analysis</u> <ul style="list-style-type: none"> • Overview of Special Core Analysis (SCAL). • Importance of SCAL in Reservoir Engineering. • Role of SCAL in Reservoir Characterization and Management.
11.30	12.00	Coffee Break
12.00	14.00	<u>Module 2: Core Sampling and Preparation</u> <ul style="list-style-type: none"> • Methods of Core Sampling. • Core Handling and Preservation Techniques. • Core Cleaning and Preservation.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

Day Two Agenda

9.00	11.30	<u>Module 3: Basic Rock Properties</u> <ul style="list-style-type: none"> • Porosity Measurement Techniques. • Permeability Measurement Techniques. • Grain Density and Bulk Density.
11.30	12.00	Coffee Break
12.00	14.00	<u>Module 4: Fluid Properties</u> <ul style="list-style-type: none"> • Reservoir Fluid Types and Compositions. • Phase Behavior of Hydrocarbons. • PVT (Pressure-Volume-Temperature) Analysis.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

Day Three Agenda

9.00	11.30	<u>Module 5: Capillary Pressure and Saturation Height</u> <ul style="list-style-type: none"> • Capillary Pressure Concepts. • Saturation Height Functions. • Laboratory Techniques for Capillary Pressure Measurement.
11.30	12.00	Coffee Break
12.00	14.00	<u>Module 6: Relative Permeability</u> <ul style="list-style-type: none"> • Definition and Importance of Relative Permeability. • Laboratory Methods for Relative Permeability Measurement. • Correlation and Interpretation of Relative Permeability Data.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

Day Four Agenda

9.00	11.30	<u>Module 7: Wettability</u> <ul style="list-style-type: none"> • Understanding Wettability in Reservoir Rocks. • Impact of Wettability on Fluid Flow. • Measurement Techniques for Wettability.
11.30	12.00	Coffee Break
12.00	14.00	<u>Module 8: SCAL in Reservoir Simulation</u> <ul style="list-style-type: none"> • Integration of SCAL Data into Reservoir Models. • Practical Applications in Reservoir Simulation.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

Day Five Agenda

9.00	11.30	<u>Module 9: Challenges and Uncertainties</u> <ul style="list-style-type: none"> • Common Challenges in SCAL Analysis. • Sources of Uncertainty in Results. • Mitigation Strategies.
11.30	12.00	Coffee Break
12.00	14.00	<u>Module 10: Advanced Topics</u> <ul style="list-style-type: none"> • Core-Log Integration. • Core Flooding Experiments. • Emerging Trends in SCAL Analysis.
14.00	14.30	Questions, Discussion & Conclusion Training Course.
14.30		Buffet Lunch

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