MERCURY

Advanced Sedimentology and Core Analysis Techniques

1 – 5 February 2027
Paris (France)



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Ref: 15959_1067520 **Date:** 1 – 5 February 2027 **Location:** Paris (France) **Fees:** 6900 Euro

Introduction to Advanced Sedimentology and Core Analysis:

This Advanced Sedimentology and Core Analysis Techniques training program offers an in-depth exploration of the complex methodologies and analytical processes that define sedimentology and core analysis. It aims at enhancing the skills and knowledge of professionals and provides an introduction to sedimentology and the principles that govern it.

Participants will explore the types of core analysis, understand what they entail, and learn about their definitions, techniques, and equipment. This Advanced Sedimentology and Core Analysis Techniques course is essential for professionals dedicated to mastering resource exploration and geological assessments, offering hands-on experience in core handling, sediment characterization, and advanced logging techniques.

Sedimentology is the study of sediments and sedimentary rocks. It plays a crucial role in understanding geological formations, particularly in petroleum exploration. Sedimentology is the branch of geology that examines the origin, composition, and deposition of sediments. An introduction to sedimentology covers its fundamental principles, including stratigraphy, depositional environments, and sedimentary structures.

Petroleum sedimentology focuses on sedimentary basins and reservoir characterization, utilizing various techniques in sedimentology to analyze rock formations. Core analysis is an essential component of sedimentological studies, providing direct insight into subsurface conditions. The core analysis definition refers to the laboratory examination of rock samples extracted from boreholes to determine their physical and chemical properties.

Core analysis techniques include porosity and permeability testing, grain size distribution, and fluid saturation measurements. Different types of core analysis, such as routine and special core analysis, help in reservoir evaluation. Core analysis equipment, including parameters and porosimetry, supports these analyses by providing accurate data on rock properties. Understanding core analysis and how it complements sedimentology is vital for geoscientists working in oil and gas exploration.

Targeted Groups:

The Advanced Sedimentology and Core Analysis Techniques course is crafted for professionals immersed in core analysis and the field of sedimentary geology, including:

- Geologists seeking to refine their expertise in sedimentology and its principles.
- Sedimentologists are looking to enhance their understanding of techniques in sedimentology.
- Petro physicists aim to explore core analysis methods and equipment.
- Reservoir engineers engaged in the intricate processes of core analysis.
- Other experts are involved in the nuanced study of sedimentary geology.

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Course Objectives:

At the conclusion of this Advanced Sedimentology and Core Analysis Techniques course, participants will proficiently:

- Handle and photograph core samples using advanced techniques in sedimentology.
- Measure and analyze grain size, sorting, and lithological characteristics using petroleum sedimentology methods.
- Identify and interpret sedimentary structures prevalent in fluvial and shallow marine environments.
- Execute detailed core logging that covers various sedimentological parameters, including what sedimentology is.
- Apply ichnological concepts to assess depositional environments and define sedimentology contexts.
- Differentiate depositional environments and recognize sediment gravity flows.
- Implement sequence stratigraphy to interpret marginal marine depositional systems.
- Calibrate core data with borehole image logs for electro-facies creation in geological mapping.

Targeted Competencies:

By the end of this Advanced Sedimentology and Core Analysis Techniques training, the participant's competencies will:

- Core analysis techniques and handling.
- Sedimentology definition and lithological identification.
- Advanced methods of core logging and interpretation.
- Ichnology application for trace fossil analysis.
- Sequence stratigraphy integration.
- Borehole log calibration for electro-facies construction.

What is sedimentology and core analysis definition?

Sedimentology is the scientific study of sedimentary rocks and sediment deposition processes. By analyzing sediment characteristics and depositional environments, sedimentology plays a crucial role in understanding geological history and resource exploration. Core analysis involves examining cylindrical samples extracted from geological formations. It provides vital information about the rocks' properties and assists in predicting reservoir characteristics. Its analysis is pivotal in petroleum sedimentology, helping uncover potential resource deposits.

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Course Content:

Unit 1: Core Handling and Initial Analysis:

- Overview of Core Facilities and Equipment.
- Introduction to core facilities, tools, and instruments.
- Core Photography and Washing Techniques.
- Best practices for photographing and washing core samples to maintain integrity.
- Grain Size and Lithological Analysis.
- Methods for measuring grain size, sorting, and lithological identification.

Unit 2: Sedimentary Structures and Core Logging:

- Sedimentary Structures in Fluvial and Marine Environments.
- Identifying and understanding sedimentary structures in fluvial and shallow marine siliciclastic successions.
- Detailed Core Logging Techniques.
- Logging grain size, lithology, contacts, and sedimentary structures on a centimeter scale.

Unit 3: Ichnology and Trace Fossils:

- Introduction to Ichnology and Ichnofacies.
- Understanding the ichnofacies concept and biogenically enhanced permeability.
- Bioturbation Index and Trace Fossil Identification.
- Logging bioturbation index and identifying common marine trace fossils.
- Interpreting Ichnofacies and Depositional Environments.
- Differentiating stressed vs. "normal" trace fossil suites and using trace fossils to interpret paralic-depositional environments.

Unit 4: Depositional Environments and Core Interpretation:

- Common Depositional Environments.
- Exploring river-wave and tide-influenced environments, including shoreface, deltas, incised valleys, and shelf-sand ridges.
- Core Logging and Depositional Interpretation.
- Techniques for logging and interpreting depositional environments post-description.
- Deepwater Sedimentology.
- Analyzing deepwater siliciclastics, including fluid vs. sediment gravity flows, turbidity currents, debris flows, and hybrid beds.
- Sediment Gravity Flows Identification.
- Identifying and describing sediment gravity flows in core samples.

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Unit 5: Sequence Stratigraphy and Borehole Imaging:

- Introduction to Sequence Stratigraphy.
- Key principles of sequence stratigraphy in marginal marine siliciclastic systems.
- Identifying Stratigraphic Surfaces.
- Recognizing subaerial unconformities, maximum flooding surfaces, ravinement surfaces, and flooding surfaces in cores.
- Borehole Image Logs and Core-to-Log Calibration.
- Electro-facies can be created by comparing core data with borehole images and gamma-ray logs and correlating these for geological mapping.