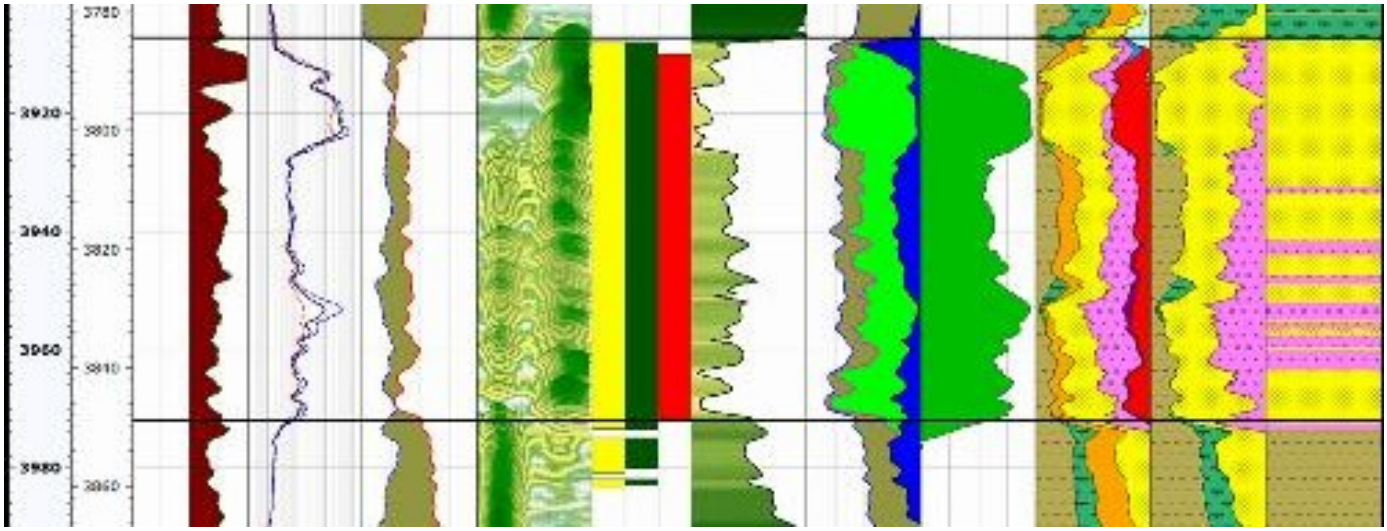
TECHNICAL
EDUCATION
ACADEMY

School of Engineering

COURSE PROGRAMME

000594

GEOP020 - Petrophysical Analysis



Learn from the Best in the Business!

Course overview

Foundation level

Why take this course

Training programme overview

The Petrophysical Analysis Training Program is an intensive 5-day course meticulously designed to bridge gaps between multiple disciplines involved in reservoir characterization and analysis in the oil and gas sector. This course aims to transition participants from a fragmented approach to a more integrated, interdisciplinary understanding of subsurface properties. The program kicks off with foundational knowledge, introducing a generic workflow that serves as the backbone for multidisciplinary reservoir problem-solving. The subsequent modules build on this foundation, diving deep into core-log integration, porosity analysis, capillary dynamics, and advanced concepts such as saturation height modeling and pressure gradient analysis.

What sets this course apart is its emphasis on practical application. Each theoretical concept is paired with hands-on exercises, case studies, and interactive workshops, allowing participants to immediately apply what they've learned. By the end of the course, delegates won't just understand the mechanics of petrophysical analysis; they'll be able to implement them in real-world situations. This is facilitated by the incorporation of software tools commonly used in the industry for petrophysical analysis, enabling attendees to gain practical experience that is directly applicable to their job roles.

The course is strategically aimed at a broad audience, including petrophysicists, reservoir engineers, geologists, well log analysts, and other subsurface team members. It also offers invaluable insights for technical managers overseeing subsurface and reservoir activities. The goal is to foster an environment where interdisciplinary teams can work cohesively, understanding how each piece of the puzzle contributes to the bigger picture in reservoir characterization and exploitation. This not only enhances individual skills but also contributes to the efficiency and effectiveness of organizational processes related to subsurface analysis. In summary, this training program is more than just a course; it's an investment in expertise, collaboration, and the future success of your reservoir operations.

Who it is for and how it helps

This Petrophysical Analysis Training Program is designed for professionals who are involved in reservoir analysis and characterization, including but not limited to:

- Petrophysicists: Professionals focused on the study of rock properties and their interactions with fluids, who can deepen their understanding and enhance their analytical skills through this course.

- Reservoir Engineers: Those responsible for optimizing the production of oil and gas reservoirs who can benefit from the integrated approach to understanding subsurface properties.

- Geologists: Professionals studying rock formations who will benefit from understanding how geology integrates with petrophysics for a comprehensive understanding of reservoir characteristics.

Course overview — continued

- Well Log Analysts: Those specialized in interpreting well log data will find this course useful for understanding how to integrate this data into broader reservoir models.

- Subsurface Team Members: Anyone involved in subsurface characterization activities including geophysicists, geomechanics specialists, and reservoir modelers who aim to understand better the interdisciplinary links between petrophysics, geology, and engineering.

- Technical Managers: Managers overseeing subsurface and reservoir studies can gain insights into the integrated workflow process and understand the intricacies of petrophysical data in reservoir characterization.

By catering to a diverse set of professionals involved in various aspects of reservoir analysis, this course aims to foster interdisciplinary understanding and collaboration for more effective reservoir characterization and exploitation.

What you will learn

- Understand the Multidisciplinary Approach: Recognize the importance of integrating geology, facies, and petrophysical rock types in reservoir characterization
- Navigate Workflow Processes: Employ a generic integrated workflow process to solve complex reservoir problems
- Analyze Porosity: Distinguish between total and effective porosity and understand their implications on reservoir quality
- Apply Core-Log Integration: Demonstrate the ability to integrate core and log data for a more comprehensive reservoir analysis
- Master Capillary Dynamics: Understand and apply concepts of capillary pressure, wettability, and relative permeability
- Perform Upscaling: Utilize upscaling techniques to translate micro-level data to macro-level insights, aiding in reservoir simulation
- Model Saturation Heights: Use saturation height modeling to understand fluid distributions in a reservoir
- Assess Petrophysical Inputs: Evaluate the role of petrophysical data in both static and dynamic reservoir models
- Utilize Pressure Gradient Analysis: Apply pressure gradient analysis techniques to establish the free-water level
- Collaborate Effectively: Communicate and collaborate with interdisciplinary teams for comprehensive problem-solving in reservoir characterization

Curriculum

Modules 01–06

01 Introduction to Petrophysical Analysis

- Course overview
- Importance in reservoir characterization
- Objective and learning outcomes

02 Generic Integrated Workflow Process

- Subsurface integration process model
- Interdisciplinary contributions
- Problem-solving methodology

03 Integration of Geology, Facies, and Petrophysical Rock Types

- Understanding facies
- Geological formations and their importance
- Rock types and classifications

04 Basics of Core-Log Integration

- Core-log data types
- Calibration techniques
- Importance in petrophysical analysis

05 Total and Effective Porosity

- Definitions and implications
- Porosity estimation methods
- Case studies

06 Applied Capillary Pressure, Wettability, and Relative Permeability

- Capillary pressure curves
- Wettability and its impact
- Relative permeability dynamics

Curriculum

Modules 07–10

07 Upscaling from Pore Throat Radius to Petrophysical Rock Type to Flow Units

- Scaling methodologies
- Impact on reservoir simulation

08 Introduction to Saturation Height Modeling

- Basic principles
- Saturation height functions
- Real-world applications

09 Petrophysics: Key to Success in a Static or Dynamic Model

- Petrophysical input in simulation models
- Static vs. dynamic models
- Interpretation and limitations

10 Advanced Concepts in Petrophysical Analysis

- Relationship between the free-water level, various contacts, pore throat radius, wettability, and saturation distribution
- Using pressure gradient analysis to establish the free-water level

Participation and contacts

Joining the programme

Contact the Academy and quote course code 000594 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
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