TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000596

GEOP005 - Sandstone Reservoirs: Exploration, Characterization, and Production

The oil and gas industry relies heavily on the efficient exploration, characterization, and production of hydrocarbon reservoirs.



Learn from the Best in the Business!

Course overview

Intermediate level

Why take this course

The oil and gas industry relies heavily on the efficient exploration, characterization, and production of hydrocarbon reservoirs. Among these, sandstone reservoirs play a crucial role in global energy production. This course aims to provide delegates with a comprehensive understanding of sandstone reservoirs, enabling them to optimize their exploration and production strategies by applying cutting-edge techniques and best practices.

The course is structured around ten modules, each designed to cover key aspects of sandstone reservoirs, from genetic stratigraphy and depositional architecture to reservoir characterization and prediction techniques. The curriculum integrates theoretical concepts with practical exercises and real-world case studies to ensure that participants can readily apply the knowledge they gain to their professional work.

One of the main objectives of the course is to help delegates recognize various depositional systems in sandstone reservoirs and understand their impact on reservoir quality and distribution. By examining clastic depositional systems, such as alluvial fans, fluvial systems, eolian systems, deltaic systems, and deepwater systems, participants will gain insights into the processes that control the formation and characteristics of sandstone reservoirs.

Another key component of the course is data acquisition and analysis, focusing on the use of wireline logs, core data, and seismic information. Delegates will learn how to effectively interpret and apply these data to characterize sandstone reservoirs and their depositional systems. This will enable them to make informed decisions when planning exploration and development activities.

The course also covers advanced techniques for predicting reservoir size, shape, trend, quality, and optimal well locations. This knowledge will prove invaluable for reservoir engineers and exploration and production managers, who must constantly make decisions to optimize operations and improve overall project success. By understanding the sedimentary controls on porosity, permeability, and saturation, participants will be better equipped to manage reservoir performance and maximize hydrocarbon recovery.

In addition to the theoretical aspects, the course places a strong emphasis on practical application. Delegates will participate in hands-on exercises, guided group discussions, and in-depth analysis of real-world case studies. This interactive approach will help participants develop integrated exploration and production strategies, fostering a deeper understanding of the challenges and opportunities associated with sandstone reservoirs.

In summary, the Sandstone Reservoirs: Exploration, Characterization, and Production course offers a comprehensive learning experience for professionals involved in the oil and gas industry, particularly those focused on sandstone reservoir exploration, development, and management. By the end of the course, delegates will have gained the knowledge and skills necessary to make informed decisions and optimize their operations in the complex world of sandstone reservoirs.

Course overview — continued

Who it is for and how it helps

This advanced course on Sandstone Reservoirs: Exploration, Characterization, and Production is designed for professionals who are involved in the oil and gas industry, particularly those who focus on the exploration, development, and management of sandstone reservoirs. The course is suitable for the following attendees:

• Geologists: Professionals involved in reservoir characterization, exploration, and development planning, who want to deepen their understanding of sandstone reservoirs and enhance their decision-making abilities.

• Geophysicists: Professionals working with seismic data and interpretation, aiming to improve their skills in identifying sandstone reservoirs and understanding depositional systems and their impact on reservoir quality.

• Petrophysicists: Experts responsible for analyzing wireline logs and core data, who want to gain a better understanding of sandstone reservoirs and their various depositional systems, as well as improve their skills in identifying flow units and predicting reservoir properties.

• Reservoir Engineers: Professionals responsible for reservoir management, production optimization, and well planning, who want to expand their knowledge of sandstone reservoirs and learn advanced techniques for predicting reservoir size, shape, and quality.

• Exploration and Production Managers: Decision-makers responsible for exploration and development strategies, who want to deepen their understanding of sandstone reservoirs to optimize their operations and improve overall project success.

• Academics and Researchers: Those involved in the study of petroleum geology, reservoir characterization, and stratigraphy, who want to update their knowledge with the latest industry practices and case studies in sandstone reservoirs.

Please note that this is an advanced course, and attendees should have a basic understanding of geological concepts, reservoir characterization, and petroleum exploration and production.

What you will learn

- Apply advanced genetic stratigraphy concepts to better understand the depositional architecture of sandstone reservoirs
- Utilize wireline logs, core data, and seismic information to effectively characterize sandstone reservoirs and their depositional systems
- Recognize various depositional systems in sandstone reservoirs and understand their impact on reservoir quality and distribution
- Identify and analyze characteristic log patterns, flow units, and other key reservoir properties to optimize exploration and production efforts
- Implement advanced techniques to predict reservoir size, shape, trend, quality, and optimal well locations for efficient reservoir management

Course overview — continued

- Evaluate the lateral continuity and quality of seals in sandstone reservoirs, and apply this knowledge to optimize exploration and development strategies
- Understand the sedimentary controls on porosity, permeability, and saturation in sandstone reservoirs and their implications on reservoir performance
- Analyze real-world case studies of sandstone reservoir exploration and production to gain insights into effective strategies and best practices
- Develop integrated exploration and production strategies by applying the knowledge and skills gained throughout the course to maximize project success
- Engage in informed discussions with multidisciplinary teams, including geologists, geophysicists, petrophysicists, reservoir engineers, and exploration and production managers, to improve overall decision-making in sandstone reservoir projects

Curriculum

Modules 01–06

01 Course Overview and Genetic Stratigraphy

- Course introduction and objectives
- Genetic stratigraphic analysis principles
- Depositional architecture and basin types

02 Data Acquisition and Analysis

- Wireline logs and core analysis techniques
- Seismic and sequence stratigraphy fundamentals
- Practical applications and interpretation of data

03 Depositional Systems and Integrated Stratigraphy

- Depositional system recognition
- Process-response facies models and their applications
- Integrated genetic stratigraphy in reservoir characterization

04 Clastic Depositional Systems - Terrestrial Environments

- Alluvial fan depositional systems
- Fluvial systems and their impact on reservoir quality
- Eolian systems and reservoir architecture

05 Clastic Depositional Systems - Coastal and Marine Environments

- Deltaic depositional systems and reservoir distribution
- Shoreline and shelf systems
- Deepwater depositional systems and reservoir characteristics

06 Incised Sequences and Shelf Margin Systems

- Incised valley sequences and their impact on reservoirs
- Shelf margin systems and their depositional settings
- Linked downslope systems and their influence on reservoir architecture

Curriculum

Modules 07–10

07 Log Patterns and Flow Units

- Characteristic log patterns for various depositional systems
- Flow unit identification and analysis
- Practical log pattern recognition and interpretation exercises

08 Reservoir Characterization and Prediction Techniques

- Predicting reservoir size, shape, trend, and quality
- Optimal well location selection strategies
- Assessing lateral continuity and seal quality in reservoirs

09 Reservoir Properties and Case Studies

- Sedimentary controls on porosity, permeability, and saturation
- In-depth reservoir exploration and production case histories
- Real-world exploration and production scaled case study analysis

10 Synthesis, Practical Application, and Conclusion

- Key course takeaways and their applications
- Hands-on exercise: Develop an integrated exploration and production strategy
- Course conclusion and final review

Participation and contacts

Joining the programme

Contact the Academy and quote course code 000596 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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