

TRAINING COURSES

Petroleum Geoscience for Engineers

(1 day or 3 days)

Available to EGI Corporate Associate Members

Principal Investigators:

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Course Structure

Lectures, Study Guide,
Documentary Video Clips,
Exercises, and Exam

Participants:

10-15

Duration:

1 Day or 3 Days

PDH:

8 hours or 24 hours

In-Person Course

Location:

EGI in Salt Lake City or
Company's location

Online Course:

Online (virtual interactive
class) is available and can
also be taken in multiple
morning sessions of 4 hours
each.

**Non-EGI Members, please contact
us for tuition details.*

EMAIL:

ContactEGI@egi.utah.edu

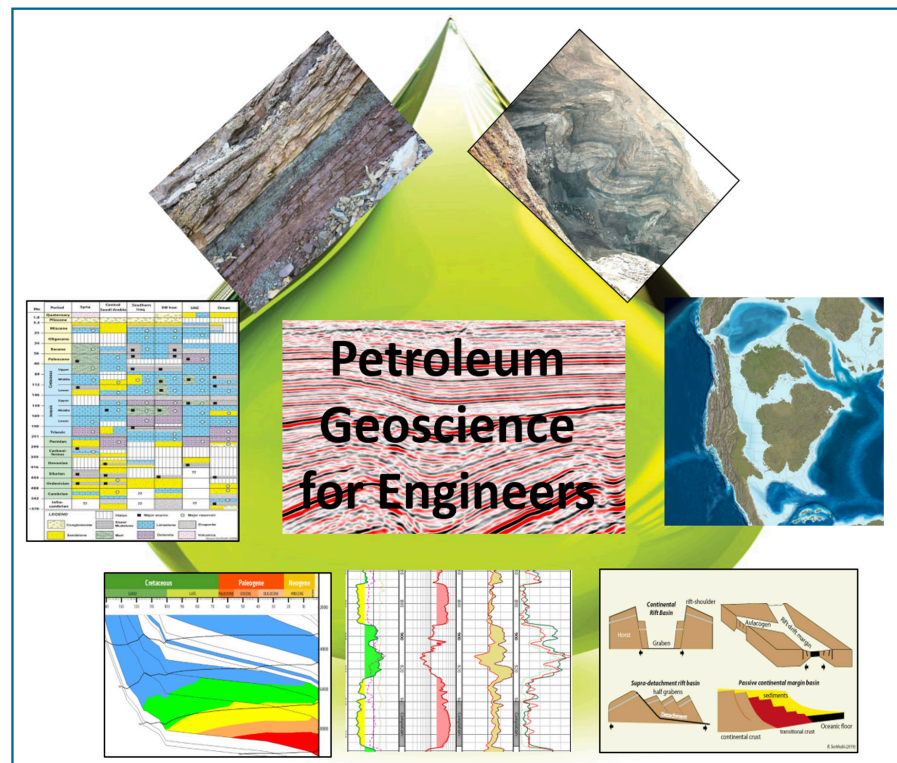
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OVERVIEW

This course is offered in two formats: 1 Day and 3 Days. The one-day "crash" course contains the essentials of the detailed three-day course.

Through the evolution of the petroleum industry, various disciplines of geoscience were incorporated into the industry. Meanwhile, geoscience has also rapidly developed in both theoretical and technological aspects. Today, petroleum geoscience is an integral part of the oil and gas industry and plays critical roles in exploration, development and production of oil and gas fields, both conventional and unconventional.



This course offers an integrated platform to understand how various disciplines of geoscience, from direct studies of rock formations at microscopic scale to geophysical survey of subsurface basins, are put together in a value chain that helps the industry to reduce its risks and costs of finding and producing hydrocarbons. Geoscience, like other sciences, is filled with jargon; we will try to learn the essential technical terms in order to understand geologic processes and principles.

The course offers petroleum engineers the basic concepts and methods in geoscience. The petroleum engineer will thus gain a knowledge-base to read and utilized geologic reports and publications independently and also communicate and collaborate with petroleum geoscientists on common projects. The course will also assist company managers coming from non-geoscience backgrounds to better integrate geoscience teams and procedures in the company's workflow.

No commodity and no industry like petroleum has ever integrated and advanced various disciplines of geoscience: Surface and subsurface mapping, biostratigraphy, sedimentology, tectonics, paleogeography, well logging, rock physics, geochemistry, basin modeling, and exploration geophysics. This course is a testimony for this great accomplishment in the history of science and technology.

OBJECTIVES AND LEARNING OUTCOME

The course aims to provide a working knowledge of the following:

- How geoscience contributes to the performance of oil and gas industries
- Processes of rock cycle, sedimentation, structural deformation, stratigraphic record
- Various geophysical and petrophysical methods to characterize subsurface formations
- Applications of the petroleum system method to prospect evaluation and reserve estimation
- Geo-rules of thumb to correlate and contrast oil and gas basins and plays across the world

Upon successful completion of the course, a Certificate indicating Professional Development Hours (PDH) will be issued by the University of Utah's Energy & Geoscience Institute.

COURSE OUTLINE

Module 1. Place of Geoscience in the Petroleum Industry

An introduction to what petroleum geoscience is; how it is used in the industry.

Module 2. Rocks and Geologic Record

Understanding the rock cycle; how various types of sedimentary rocks form, how we can identify and characterize sedimentary rocks and depositional environments; how geologists determine the ages of rocks, and how the geologic timescale is constructed and utilized.

Module 3. Deformational Structures and Basin Dynamics

All petroleum basins are deformed sedimentary basins. Structural geology is thus essential. How faults, fractures (joints) and folds develop; various approaches to study and map deformational structures. Plate tectonics and its use for classifying and characterizing sedimentary basins – their formation, evolution and sediment in-fill.

Module 4. Geophysical Techniques for Subsurface Imaging

Geophysical techniques, especially seismic survey, have revolutionized our understanding of sedimentary basins, their architecture as well as mapping of petroleum system elements.

Module 5. Well Logs and Formation Evaluation

Well logging is the technology of the first encounter with subsurface rocks, petrophysics is the science, and formation evaluation is the target of characterizing rock properties.

Module 6. Geochemistry of Rocks and Fluids

Basic understanding of petroleum geochemistry, specially source rocks and hydrocarbons (oil and natural gas).

Module 7. Petroleum System and Prospect Analysis

From generation (source rocks) to accumulation (reservoir and traps), all petroleum system elements and processes are necessary to evaluate. Prospect ranking and reserves estimates.

Module 8. Synthesis

Putting it all together.

TARGET AUDIENCE

Petroleum Geoscience for Engineers is specifically designed for petroleum engineers who want to learn about various aspects of petroleum geoscience and its place in the petroleum industry. No prerequisite geology courses.

PERSONAL MESSAGE FROM THE INSTRUCTOR:

Thank you for your interest in this course. Dr. Sorkhabi has designed this course based on his years of teaching it as part of the MS in Petroleum Engineering program at the University of Utah's Department of Chemical Engineering. He approaches the topic from the philosophy that (to quote the late Kevin Burke) "all geology is regional geology," which means that whatever we learn should have ground truth in rocks and regions. Rasoul is also currently editing Springer's Encyclopedia of Petroleum Geoscience. We look forward to seeing you and learning from you as well.