



**«ADVANCED TECHNIQUES OF PETROLEUM EXPLORATION»,
 5 days**

COURSE OBJECTIVE:

Development of professional competencies in advanced petroleum exploration from data analysis to sweet spots identification, reservoir estimation and risk reduction, including integration with seismic, electromagnetic and basin modeling data for identification of lead area and HC phase.

ACQUIRED ABILITIES:

- Do exploration works;
- Perform integration of regional geology, petrophysics, basin modeling, and seismic data;
- Identify the HC phase on the examples of seismic data interpretation, attributes and basin modeling application;
- Apply various reserves estimation technics;
- Use all data for risks reduction and more precise reserves estimation.

COURSE CONTENT:

Module Name	Content
Main principles of petroleum exploration	Data. Petroleum exploration procedure. What is the key to success?
Regional geology	Sedimentary basin analysis. Well analysis.
Petrophysics	Logging. Different lithologies (clastics, carbonates, shale). Depth trends. Clay mineral effect. Formation pressure effect. Permeability.
Seismic interpretation	Regional and more detailed seismic interpretation. Depositional environment. Sequence stratigraphy. Spectral decomposition. Traps.
Rock Physics	DHI indicators. Amplitudes analysis. Lithology indicators. Reservoir properties. Exercise.
Electromagnetic	Theory. Examples.
Basin modeling	Temperature gradient. Basin thermal history. Source rock types. Time – temperature (depth) relationship. Basin modeling data. Maturation and HC phases. Timing. Exercise.
Seal rocks	Formation pressure. Fracture pressure. Seal quality. HC column calculation. Exercise.
Play maps	Play maps theory. Generation of play maps
Resource estimate	Deterministic method. Statistical method. Reservoir simulation.

Risking	Main risking parameters. Reservoir. Seal and sealing properties. Source rock. Timing, migration and preservation.
Case studies	Examples of successful and failure exploration wells
Exercises	Practice on resource estimation, seal capacity and HC phase calculation from seismic data.