WELL LOGGING TECHNOLOGIES

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Research Interests: Resistivity logging data simulation and interpretation, design and optimization of new logging systems, crosswell electromagnetic imaging, petrophysics, formation evaluation, and petroleum geophysics.

Course Goal

This course is aimed at mastering the physical foundations of logging techniques that are widely used throughout the world in the search and development of hydrocarbons and other mineral resources. Students will also acquire knowledge of contemporary approaches to logging data interpretation.

Course Outline

- Introduction to well logging.
- Petrophysical foundations of quantitative logging data interpretation.
- Physical fundamentals of conventional logging techniques: electrical, electromagnetic, radioactive, acoustic, etc.
- Physical fundamentals of special logging techniques: multicomponent induction logging, nuclear magnetic logging, cased-hole electric logging, borehole imaging, etc.
- Logging while drilling.
- Crosswell electromagnetic imaging.
- Wireline well services: inclinometry, casing perforation, cement-bond logging, flowmetry, water-influx location, temperature logging.
- Contemporary approaches to identifying reservoirs, determining porosity and fracturing, permeability, clay content, lithological composition and fluid saturation.
- Special aspects of quantitative logging data interpretation from vertical and highly deviated wells.

- Logging data integration.
- Computer systems for logging data interpretation.
- Practical works on logging data interpretation in the sections of vertical and highly deviated wells: lithological differentiation, identification of reservoirs, formation evaluation.