

GP 302 - Well Logging

Unit I

Introduction: Bore hole characteristics, Mud filtrate Invasion Flushed and Invaded zone, properties of aquifers, Formation factor, presence of water, oil and gas, classification of logging techniques. (14 Hours)

Unit II

Electrical logging methods: S. P. Logging Origin of SP., PSP. and SSP, Interpretation, Resistivity logging, Normal and Lateral logs Determination of true resistivity.

Focussed and non focussed logs, laterology, Microlaterology, flushed zone resistivity: Mudcake and mudfiltrate resistivities. (22 Hours).

Unit III

Theory and interpretation of Induction logging, True resistivities; Electromagnetic propagation tool.

Radioactive logging: Natural Gamma ray logging, Neutron logging, Neutron Gamma and Neutron - Neutron techniques, Pulse neutron and thermal decay techniques, porosity determination. (17 Hours)

Unit IV

Sonic log; BHC, Sonic log, spaced array sonic Dipmeter logs Stratigraphic High Resolution Dip meter, Formation microscanner; Temperature log; Caliper log; CBL carbon - Oxygen log - Direct detection of hydrocarbons.

Interpretation: Departure curves, cross plots for porosity and lithology, Determination of R_t , F , R_w and S_w , determination of permeability. (20 Hours)

Unit V

Reservoir Analysis: Oil and gas reservoirs, Repeat formation tester, production tests and pressure analysis. Hydraulic fracturing problems of exploitation. Application of well logging to ground-water and mineral resources. (15 Hours)

Books:

1. Formation Evaluation by E.J. Lynch
2. Induction Logging by Pluysnin
3. Log interpretation principles and charts by Schlumberger
4. Development and exploitation of oil and gas fields by Muravyor and Andiasvretal.
5. Handbook of well log analysis by S.J. Pearson.
6. Advanced log interpretation by Diwan.