Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NGPC530	**Well Logging**	3	0	0	3

Course Objective
Knowledge on Well Logging Tool. Knowledge on borehole Corrections. Knowledge on Perforation and Cased-hole tools
Learning Outcomes
Upon successful completion of this course, students will: The primary objective of the course is to introduce Well logging Techniques for Hydrocarbon and groundwater exploration.

Unit No.	Details of Lectures	Lecture Hrs.	Outcome
1.	Introduction to well logging and borehole environment.	**2**	History of logging and Use of drilling fluid
2.	Rock composition, Resistivity and water saturation Profile with lateral distance for Oil wet and Water wet rock	**1**	Property variation with later distance in wells
3.	Definition of porosity and permeability, Darcy's law, absolute permeability, effective and relative permeability, effective porosity. Relationship between porosity and permeability.	**1**	To know the Darcy's law
4.	Formation Factor, Resistivity Index and Water saturation, Archie's Law	**2**	To know about Archie's law
5.	Principles of Spontaneous Potential (SP) tool and borehole environmental correction	**3**	SP Log response
6.	Resistivity Tools (Normal, Lateral, Laterolog, Dual Latero log and Dual Induction log) and borehole environmental correction.	**5**	Resistivity tools and response
7.	Sources of Natural Gamma ray and Natural Gamma Ray Spectrometry tool, Compensated Neutron Logging (CNL) Tool.	**4**	GR tools and response
8.	Formation Density Compensated Tool, Borehole Compensated Sonic/Acoustic Tool, CBL/VDL tool	**5**	Density tool and response
9.	Dipmeter Logging Tool	**1**	Principle of Dipmeter tool
10.	Temperature, Caliper, Repeat Formation Tester (RFT), Side Wall Coring, Four-Arm Dip meter logs.	**4**	Principle of Temperature, caliper, RFT, coring tools
11.	Thermal Decay Time (TDT) Tool Logging while Drilling (LWD)/ Measurement while	**5**	Principles of TDT and

	Drilling (MWD)		LWD/MWD tools
12.	Continuous Flow meter Tools	**3**	Concept of continuous flowmeter tools
13.	Fluid Density and Temperature measurement Tool in producing well	**3**	Log response of Fluid density and Temperature measurement tools in producing well
14.	Perforation Devices, Depth control and Safety aspects in wells	**3**	Use of perforation in wells
	Total Classes	**42**	

Text Books

1. Bateman, R, M., Open Hole Log Analysis and Formation Evaluation.
2. Bateman, R, M., Cased Hole Log Analysis and Reservoir Performance Monitoring.

Reference Books

1. Brock, J., Open Hole Log Analysis
2. Ellis, D. V., Well Logging for Earth Scientists
3. Helander, D. P., Fundamentals of Formation Evaluation.
4. Serra, O., Fundamentals of Well Log Interpretation
5. Vaish, J. P., Geophysical Well Logging: Principles and Practices