Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NPEC503	Formation Evaluation and Production Logging	3	1	0	4

Course Objective

The objective of the course is to provide the applied knowledge of production and cased-hole logging methods and interpretation techniques for determination of reservoir properties and production evaluation.

Learning Outcomes

Upon successful completion of this course, students will:

- have understanding the principle of different cased hole logging and application
- be able to understand monitoring of reservoir production &problem identification using production log data
- be able to use well log to evaluation formation; porosity, permeability & residual oil saturation calculation

Unit No.	Topics to be Covered	Contact Hours (L+T)	Learning Outcome
1	Temperature logging: theory, measurement, interpretation and detection of hydraulic fracture	4+1	It gives an idea about temperature measurement and its use in different
2	Radioactive tracer logging: introduction, tracer and velocity-shot log, and two pulse tracer logging. Spinner flow meter logging: introduction, theory and spinner log interpretation	5+1	The measurement of fluid flow inside the well bore and application to solve different problem will be explained to students with the help of different production logging
3	Single-phase flow profiling by compression of temperature, radioactive tracer and spinner flow meter logs. Production logging in multiphase flow: operational procedures, fluid Identification log and its qualitative and quantitative interpretation	6+2	Advanced multiphase flow measurement and data interpretation to model the well bore production will be understood by students.
4	Production logging and layered system with reference to reservoir engineers' application of production logging. Production logging in horizontal wells	5+1	Use of production logging tool in different specific condition will be explained to students
5	Resistivity through casing: cased-hole formation resistivity tool. Pulsed neutron logging: principle, interpretation and application. Dual water model oil saturation determination and identification of water injection zones. Reservoir time-lapse maps	7+3	Student will be able to measure the saturation of fluid behind the casing in producing well with the help of different logging methods.
6	Inelastic gamma ray logging: carbon-oxygen log, cased-hole wireline formation tester.	5+2	Student will learn about new methods in cased hole logging and can interpretate these logs to characterize a number of
7	Downhole casing inspection tools and fluid movement: noise logging & pulse neutron logging and application.	5+2	Student will be able to analyse the sound measurement and their interpretation in terms of fluid flow.
8	New logging techniques, permeability evaluation from well logs data.	5+2	Student will be able to calculate the permeability from well logs by applying different interpretation techniques
	Total contact hours	**42 L+ 14 T = 56**	

Text Books:

1. Production logging – Theoretical & Interpretive Elements, A. D. Hill, SPE Monograph Series Vol. 14,1990
2. Cased-Hole Log Analysis and Reservoir Performance Monitoring, Richard M. Bateman, Springer, 2015

References:

1. Wireline Formation Testing & Well deliverability, George Slewal, PennWell, 2012
2. Cased- Hole Log Interpretation: Principles and Applications, Schlumberger Ltd,1989