Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NPEC510	Petroleum Instrumentation and Measurements	0	0	3	1.5

CourseObjective
Theobjectiveofthecourseistodevelop knowledgeondifferentInstrumentsrelatedtopetroleumIndustry
LearningOutcomes
Upon Successful Completion Of This Course,students will: • Able To Run Different Instruments Individually • Understandtheknowledgeofprincipleofdifferentmeasurements.

Sl. No.	Name of Experiment	Contact Hours	Learning outcome
1.	Study Of water flooding and measurement of oil recovery	6	Learn the fundamental concept of water flooding as an enhanced oil recovery (EOR) technique.
2.	Measurementofinterfacialtensionbetweencrudeoilandwaterbyspinningdroptensiometer	3	Learn how a spinning drop tensiometer works as a tool for measuring interfacial tension.
3.	Wettability Alteration study by surfactant solution.	3	Understand the role of surfactants in altering surface tension and their ability to modify wettability.
4.	Chemical Analysis ofoilbyGas Chromatography	3	Learn how to operate the GC system for oil analysis, including preparing the instrument for use and interpreting the chromatogram
5.	Functional group analysis ofoilbyFTIR	3	Understand how these functional groups can provide insight into the chemical composition and characteristics of different oils.
6.	Measurement Of Dynamic Surface Tension:Effect Of Temperature And Salinity	6	Comprehend the basic principles of surface tension, including the forces acting on the surface molecules of a liquid.
7.	Analysis Of Pressure Drop for flow of oil/water through pipeline	3	Define pressure drop and explain the different causes of pressure drop, including frictional losses, and gravitational effects.
8.	Studiesofpourpointdepressionbypourpointdepressant	6	Define the pour point of a fluid and explain its importance in the context of

			crude oil, petroleum products, and lubricants.
9.	Pressuredropanalysisoffracturingfluidatdifferentproppantloading	3	Investigate how varying proppant concentrations or loadings affect the pressure drop in fracturing fluid flow.
10.	Wettability Studies usingAmottCell Effect of surfactant on oil-water phase behaviour	6	Define wettability and explain its significance in petroleum engineering, particularly its role in oil recovery, fluid flow, and reservoir behavior.
	Total Contact Hours	**42**	

Text Books:

1. Petroleum Production Systems, Economides et àl., Prentice Hall, 2012.
2. Production Operations II, Thomas O. Allen and Alan P. Roberts, PennWell books, 2012.

Reference Books:

1. Artificial Lift Methods, Kermit Brown, Vol. 4, PennWell Books, 1984.