

Reservoir Engineering-II

1.1 Course Number: PE242

1.2 Contact Hours: 26 Credits: 2-0-2

1.3 Semester-offered: 2nd Year-Even

1.4 Prerequisite: Reservoir engineering I, Engineering mathematics

1.5 Syllabus Committee Member: Dr. Vishnu Chandrasekharan Nair, Dr. Amit Kumar Dr.

Shivanjali Sharma

2. Objective:

- To understand the mathematical formulation of flow equation in porous media
- To introduce concepts of Immiscible displacement and reservoir pressure maintenance techniques

3. Course Content:

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Fluid flow through porous media	Review of rock and fluid properties, Fluid flow through porous media: Types of Fluids, Flow Regimes; Reservoir Geometry, Fluid Flow Equations, Steady-State Flow, Unsteady-State Flow, Pseudo steady-State Flow.	10
2	Water influx and Reservoir pressure maintenance	Water influx, Reservoir pressure maintenance techniques, their advantages and limitations.	7
3	Immiscible displacement processes, Water and Gas Coning	Immiscible displacement processes: Theory & practices- Buckley Leverette treatment of fractional flow and frontal advance equations, water flood performance, Water and Gas Coning	9
		Total	26

List of Practical

1. Core preparation
2. Measurement of Porosity
3. Measurement of Permeability
4. Measurement of Wettability
5. Surface and interfacial tension measurement
6. Saturation measurement
7. Capillary pressure measurement
8. Core resistivity measurement

4. Readings

4.1.1. Fundamental of Reservoir Engineering, L.P. Dake.

4.1.2. Petroleum reservoir simulation. Aziz, Khalid, and Antonin Settari

4.2 REFERENCE BOOKS:

4.2.1. Applied Petroleum Reservoir Engineering, B.C. Craft, M. Hawkin

5. OUTCOME OF THE COURSE

Introduction to key principles of fluid flow and advanced recovery.