

**17MPE124: Advanced Enhanced Oil Recovery**

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
2	1	0	3	3	25	50	25	--	--	100

**Unit 1:**

**Hours: 6**

Resource and Reserve within reservoir; Estimation of reserve using deterministic and stochastic technique, understanding primary; secondary and tertiary recovery; Development of primary production profile; Determination of secondary recovery profile; flow of immiscible fluids through porous media

**Unit 2:**

**Hours: 12**

EOR and IOR differentiation; Water flooding; frontal advancement theory; types of water flooding and patterns used (5 spots, 7 spot, 9 spot, staggered, direct line, skewed and unscrewed); well spacing and design; unit mobility ratio and non unit mobility ratio; breakpoint and coning effect; stiles method; Buckley Leverette Equation and Dykastra Parson Equation; Associated Numerical.

**Unit 3:**

**Hours: 8**

Various techniques used in EOR; Classification of methodologies and application of the same in various reservoir conditions, understanding mobility, mobility ratio and sweep efficiencies (vertical and horizontal sweeps), Alkaline Flooding, Polymer Flooding and Surfactant Methods (Chemical); CO<sub>2</sub> Gas Flooding, Foam induced Flooding.

**Unit 4:**

**Hours: 10**

Miscible and Immiscible Flooding. Miscible Displacement Processes, Mobilization of residual oil, Condition of Miscibility, Matrix Acidization – Preparation of Acid, Induction of Acid, Skin Changes. Screening Criteria and description of usage for Thermal Methods. Hot fluid Injection. Insitu Combustion. Microbial EOR.

**Total Hours: 36**

**Text and References:**

1. Lake, L. W. (1989) Enhanced Oil Recovery, Prentice Hall
2. Latil, M. (1980) Enhanced Oil Recovery, Technip Publication
3. Donaldson, E. C.; Chilingarian, G. V. and Yen, T. F. (1985) enhanced oil recovery –I Fundamentals and Analysis, Elsevier.
4. Ganesh C. Thakur, Integrated Waterflood Asset Management
5. Teknica (2001); Enhanced Oil Recovery; Teknica Petroleum Services Limited