20PEB408E					ENHANCED OIL RECOVERY					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hours/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
2	0	0	2	2	25	50	25	-	-	100

COURSE OBJECTIVES

- Demonstrate the concepts of EOR.
- Evaluate performance analysis of field scale implementation of EOR.
- Develop skills to predict suitable EOR Scheme.
- Develop skills to plan EOR program

Unit I **Hours: 5**

Introduction to EOR processes: Definition, Difference of IOR and EOR, Target oil resource for EOR, General Classification. Description and potential of different EOR processes.

Unit II **Hours: 5**

Microscopic and macroscopic displacement of fluids in a reservoir, Displacement efficiency in different system – linear, areal, volumetric, Definition and discussion of mobility ratio and mobility control processes for different types of fluids

Unit III **Hours: 10**

Candidates for EOR processes and Selection Criteria Miscible/Immiscible displacement processes - water flooding, gas injection, micro-emulsion flooding Chemical Flooding - polymer flooding, Surfactant flooding, Micellar flooding related methods Thermal recovery processes- in situ combustion, hot-water injection, steam flooding, SAGD Microbial EOR. **Selection criteria for EOR:** Determination of residual oil (well test, reservoir performance, core analysis, cased /open hole logs, single well tracer), Laboratory studies, Field pilot test and evaluation, Techno economic feasibility, Full scale implementation, Monitoring and review

Unit IV **Hours: 6**

Global Scenario of EOR and Some Case Studies

Field scale implementation and their performance of various EOR schemes of local and global context.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1- Relate an EOR operation with their knowledge

CO2- Illustrate the need of EOR in oil field

CO3- Identify the effect of different EOR fluids on the recovery of reservoir

CO4- Analyse the feasibility of EOR

CO5- Design a plan to implement EOR

CO6- Validate EOR by performing Pilot studies

TEXT / REFERENCE BOOKS

1. Enhanced Oil Recovery, I –Fundamentals and analyses – E. C. Donaldson, G. V. Chilingarian, T. F. Yen (Edited) – Elsevier Science Publishers B. V. – 1985.
2. Enhanced Oil Recovery, II –Processes and operations – E. C. Donaldson, G. V. Chilingarian, T. F. Yen (Edited) – Elsevier Science Publishers B. V. – 1989.
3. Modern Chemical Enhanced Oil Recovery: Theory and Practice-James J. Sheng, Gulf Professional Publishing, Elsevier.
4. Enhanced Oil Recovery – D. W. Green, G. P. Willhite – SPE Textbook Series Vol. 6 -1998.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs.**

PART A: Part A/Question: <Short Notes, Problems, Numericals> **20 Marks**

PART B:<Justification, Criticism, Long answers, Interpretation > **80 Marks**