

20PEB411E					FLOW ASSURANCE					
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 flow assurance.
- Illustrate the analytical tools for flow assurance.
- Enhance skills to analyse and interpret basic descriptive and inferential statistics.
- Develop skills to address flow constraints in oil fields.

Unit I

Hours: 6

Definition of Flow assurance, Typical Production System, Criteria of flow assurance, Resistances to the flow, various issues encountered for flow assurance in the industry, Importance of velocity profiles, temperature profiles and concentration profiles in prediction flow assurance issues. Importance of Pressure drop calculations in flow assurance industry

Unit II

Hours: 8

Definition of Slugging, Terminology used in slugging, Flow Pattern Maps and its utilization, Definition and criteria for terrain slugging and severe slugging, Remedies of slugging, terrain slugging and sever slugging, Liquid Loading definition, symptoms of liquid loading, Models used to predict liquid loading, Mitigation of Liquid Loadings

Unit III

Hours: 6

Wax Deposition definition, Wax deposition Criteria, Models used to predict Wax deposition remedies and mitigation techniques for wax deposition, Definition of Gas Hydrates, Criteria for formation of Gas hydrates, Models utilized for prediction of gas hydrates, remedies and mitigation techniques of gas hydrates

Unit IV

Hours: 6

Scale Deposition definition, Scale deposition Criteria, Models used to predict Scale deposition remedies and mitigation techniques for Scale deposition , Definition of Asphaltenes, Criteria for formation of Asphaltenes, Models utilized for prediction of Asphaltenes, remedies and mitigation techniques of Asphaltenes.

COURSE OUTCOMES

On completion of the course, student will be able to.

- CO1- Recognise a Flow Assurance problem.
- CO2- Illustrate the need for flow assurance problem mitigation.
- CO3- Apply knowledge to understand problems in details.
- CO4- Analyse the problem to know the root cause.
- CO5- Plan a remedial activity unique to the flow assurance problem.
- CO6- Recommend jobs to mitigate flow assurance problem.

TEXT / REFERENCE BOOKS

1. Mechanistic Modeling of Gas-Liquid Two-Phase Flow in Pipes. Ovadia Shoham: 2006: 408 pp.; Softcover: ISBN: 978-1-55563-107-9: Society of Petroleum Engineers
2. Organic Deposits in Oil and Gas production, Wayne Frenier, Murtuza Ziauddin, Ramachandran Venkatesan, 2010, Softcover: ISBN: 978-1-55563-291-5, Society of Petroleum Engineers
3. Formation, Removal, and Inhibition of Inorganic Scale in the Oilfield Environment,, Wayne Frenier, Murtuza Ziauddin, 2008, Softcover: ISBN: 978-1-61399-279-1, Society of Petroleum Engineers

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

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

PART B:<Justification, Criticism, Long answers, Interpretation >

Exam Duration: 3 Hrs.

20 Marks

80 Marks