

Pandit Deendayal Energy University
Department of Petroleum Engineering, School of Energy Technology

20PEB306P					Introduction to Petroleum Software					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	2	1	2	-	-	-	50	50	100

COURSE OBJECTIVES

- To provide an overview of software tools used in the oil and gas industry
- To provide the importance of modelling and simulations for different petroleum engineering problems
- To explain how to identify the best tool matching the type and scope of the numerical study

List of Experiments:

Experiment 1: Developing Analytical Model using Buckley Leverett Solution.

Experiment 2: Developing Numerical Model for One Dimensional Flow through Porous Media Problem.

Experiment 3: Reservoir Modelling and Simulation Using IMEX/GEM/tNavigator.

Experiment 4: History Matching Problem

Experiment 5: Integrated Static and Dynamic Modeling using tNavigator

Experiment 6: Introduction to Well Testing using Sapphire/Topaze/ Emeraude

Experiment 7: Design of Hydraulic fractures for Mini-frac and fracture applications using FracPro.

Experiment 8: Introduction to Integrated Production Modeling Suite.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1: Demonstrate the role of simulation software in the engineering industry and in specific to the upstream petroleum industry
- CO2: Classify the various software tools available in the individual domain of upstream petroleum industry like seismic data processing and interpretation, reservoir modelling and simulation, drilling and production engineering.
- CO3: Build a reservoir simulation model using CMG (reservoir simulation software) and simulate the specific initial and boundary constraints defined.
- CO4: Excel the fundamental modelling workflows associated with the simulation software like conceptualizing, mathematical modelling, numerical modelling and solving the set of equations using the gauss elimination technique.
- CO5: Comprehend complex and dynamic nature of the petroleum engineering problems and formulate a solution strategy for effective management at the field scale.
- CO6: Identify the best tool matching the type and scope of the numerical study the student has been deployed to perform in the future.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

PART A: Evaluation Based on the class performance and Laboratory book

PART B: Viva Examination based conducted experiments

Exam Duration: 3 Hrs

50 Marks

50 Marks