

Course Type	Course Code	Name of Course	L	T	P	Credit
DC12	PEC307	Oil & Gas Well Testing	3	0	0	9

Course Objective

Basic well testing techniques for reservoir characterization
 Diagnosis of productivity problems and evaluation of stimulation treatment effectiveness

Learning Outcomes

Understanding different interpretation methodology of various types of well testing
 Skills for performing diagnostic analysis, history matching, and characterization.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction to well testing: Objectives and requirements. Diffusivity Equation Derivation & Solutions, Radius of investigation, principle of superposition. DST chart observation and preliminary interpretation, RFT, MDT	4	Objectives of oil and gas Well Testing
2	Pressure Transient Tests: Drawdown and build-up-test analysis, Reservoir limit test, Horner's approximation, determination of permeability and skin factor, Analysis of pressure build-up tests distorted by phase redistribution,	5	Measurement of Reservoir Properties by Pressure Transient Tests
3	Well Test Interpretation: Well-test interpretation in hydraulically fractured wells, Interpretation of well-test data in naturally fractured reservoirs, Wellbore storage effects, Multilayer reservoirs, Injection well testing, Multiple well testing, Wireline formation testing. Interference testing, Pulse testing.	5	Interpretation of well test data for complicated
4	Type curves: Fundamentals of type curves, Ramey's type curve, McKinley's and Gringarten, Bourdet type curves.	4	Important of Type Curves in interpretation of Well test data
5	Gas well testing: Basic theory of gas flow in reservoir, Flow-after-flow test, Isochronal test, etc.	5	Special consideration of well test analysis for gas reservoirs
6	Well Test Analysis Part A: Well testing tools and techniques, Variable-rate convolution: Single-rate pressure build-up case, Conventional analysis of pressure drawdown/build-up test data.	5	Details of well testing tools
7	Well Test Analysis Part B: Analysis of gas well tests, Un-fractured and fractured wells, and dual porosity reservoirs, Design of well tests, Software for the analysis of well test data.	5	Well test for fractured wells and analysis of test data using software
8	Applications of well testing: Well testing in horizontal wells, Extended Reach wells & multi-laterals wells, tests with and without flow measurement.	5	Special consideration of well test analysis for horizontal and multilateral wells
9	Computer-aided well test analysis: Derivative plot, diagnostic plot evaluation, data preparation, nonlinear regression, Introduction to well testing software.	4	Analysis of well test data by software with real time data
Total contact hours:		42	

Text Book:

- i. Pressure Transient Testing, SPE Textbook Series Vol. 9, (2003): John Lee, John Rollins, and John Spivey,

Reference Books:

- i. Gas Well Testing Handbook, Elsevier Science, ISBN 0-7506-7705-8 (2003): Amanat U. Chaudhry
 Oil Well Testing Handbook, Elsevier Science & Technology, ISBN 978-0-75067706-6 & electronic ISBN 978-0-0805-7979-8 (2004): Amanat U. Chaudhry