

Faculty of Engineering & Technology

Well Testing Analysis

Information :

Course Code : PE 404

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Petroleum Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Omar Saad Ahmed Mahmoud	
Teaching Assistant	AHMED NAGUIB ABDELAZIZ ABDELAZIZ GHONIM	
Teaching Assistant	Mohamed Osama Mohamed Abbas	

Area Of Study :

The Main Goals of this course are preparing student to:

- Enrich knowledge about fluid flow in porous medium.
- Enrich knowledge about the different flow regimes in porous medium.
- Prepare to analyze, design and/or interpret different well tests.
- Develop skills to recognize gas well tests.

Description :

The course aims at expanding the scope of knowledge of the well test analysis. By studying the following topics: Incompressible fluid flow: steady state flow potential and stream lines, compressible fluids: unsteady state, diffusivity equation multi-phase flow, Application in well testing: Build-Up and Draw Down well test analysis- formation damage and skin factor, variable rate tests, Well Interference, Gas well testing.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Review mathematics of fluid flow through porous medium.
2 -	Utilize well test analysis for formation evaluation.
3 -	Utilize the methodology of solving diffusivity equation.

b. Intellectual Skills: :

1 -	Use the principles of engineering science in developing diffusivity equation solutions
2 -	Evaluate well testing results according to geological and well logging data.
3 -	Select appropriate mathematical modelling for type curve matching.
4 -	Select appropriate solution of formation damage problem.

c. Professional and Practical Skills: :

1 -	Apply knowledge of mathematics to solve diffusivity equation.
2 -	Perform analysis of well testing data.
3 -	Deal with the high level of uncertainty of well test data.

d.General and Transferable Skills: :

1 -	Communicate effectively with others.
2 -	Work in team and solve problems.
3 -	Use internet in to Analyze results.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Fluid flow in porous medium	10	6	4
Flow regimes in porous medium	5	3	2
Applications of diffusivity equation	10	6	4
Draw down test	10	6	4
Build up test	10	6	4
Back pressure test	10	6	4
Isochronal test	5	3	2
Modified Isochronal test	5	3	2
Well interference test	5	3	2
Pulse test	5	3	2

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	15.00		
Final Exam	40.00		
Mid- Exam I	25.00		
Participation	10.00		
Quizzes	10.00		