Faculty of Engineering & Technology

Well Logging

Information :

Course Code :	PE 406	Level	:	Undergraduate	Course Hours :	3.00- Hours

Department :	Department of Petroleum Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Mohsen Gad Elkarim Elnoby Mohamed	
Assistant Lecturer	YOUSSEF ELSAYED ABDELHAFEZ KANDIEL	

Area Of Study :

The Main Goals of this course are preparing student to:
  Understand meaning of well logging and differences between wire line logging and
logging while drilling tools.
  Understand how to work the Bore hole environmental tool.
  Understand Gamma ray, Density, Neutron and sonic log
  Understand Conventional Resistivity Log
  Understand how to make well logging interpretation

Description :

An introduction to the electrical, nuclear, and acoustic properties of rocks: theory and
interpretation of conventional well logs. Methods of well logging: conventional resistivity-
Self potential-Later logs . Micro logs . Radiative Logs . Sonic logs . Density logs - Well
logging data interpretation to determine porosity, rock saturation, flow units, and reservoir
characterization.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Illustrate differences between logging tools.
2 -	Estimate Possible Reservoir zone and non-reservoir zone from logging.
3 -	Recognize Lithology types of each zone.
4 -	Interpret clay volume and its type in different zone.
5 -	Define the physical properties for each zone.

b.Intellectual Skills: :

1 -	Characterize any log in details
2 -	Analyze the principle of each zone of petro physical properties
3 -	Apply clay volume calculations and water saturation with different model
4 -	Implement all the available information to solve well logging problems with limited data.

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c.Professional and Practical Skills: :

1 -	Use different Tools to characterize the reservoir.	
2 -	Differentiate among models that calculate water saturation and clay volume.	
3 -	Differentiate from conventional and unconventional reservoir from log.	

d.General and Transferable Skills: :

1 -	Work coherently and successfully as a part of a team in projects.	
2 -	Make a successful report clearly on well performance.	
3 -	Develop the report writing skill and presentation skills.	

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
What is Well Logging	6	3	3
Grains, Porosity and Pore Sizes	8	5	3
Clay Types and properties and its effect on porosity values	14	8	6
Borehole Environment "Gamma Ray Tool"	8	5	3
Porosity Measurements	12	9	3
Neutron Measurement Tool	6	3	3
Density Measurement Tool	6	3	3
Photo-Electric Measurements, Resistivity Logs and Water Saturation	15	9	6

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	20.00		
Final Exam	40.00		
Mid- Exam I	30.00		
Report	10.00		

Recommended books :

- Zaki Bassouni, %Theory, Measurement and Interpretation of Well Logs
- Halliburton well logging work book.

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