Faculty of Engineering & Technology

Intoduction to oil well drilling

Information :

Course Code :	PE 202	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department : Department of Petroleum Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Mohsen Gad Elkarim Elnoby Mohamed	1
Teaching Assistant	Taha Abdelhamid Abdelmaqsoud Abdelhamid Yehia	

Area Of Study :

On completion of this course students should be able to demonstrate knowledge and understanding of:
1. Drilling Rigs types (both Onshore and Offshore), Rig Systems and Rigs Power Design.
2. Understanding of drilled hole Sections.
3. Understanding and calculating all types of down hole hydraulics, pressures and temperature calculations.
4. Design of bottom hole assemblies.
5. Selection of drilling bits.
6. Introduction to drilling fluids: Functions, types and properties.
7. Safety rules applied while drilling " HSE"

Description :

Introduction to the fundamentals of oil and gas well drilling. Fundamental physical principles and calculations used in drilling. Exposure to oil well drilling training software.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Define Basis of Drilling Engineering needs for Well Planning
2 -	Define Basis of Well Design related to Pressures and Temperatures.
3 -	Explain Drilling Rigs (both Onshore and Offshore), Rig Systems and Rigs Power Design
4 -	Illustrate Basis of Drill String Design: Types and Techniques. Operationally how to prepare and run Bottom Hole Assemblies (BHA).
5 -	Illustrate Drilling Bits: Types, Selections and Operationally how to select Optimum Parameters.
6 -	Describe Hole Sections
7 -	Describe briefly Drilling Fluids: Function, Types and Properties.
8 -	Recognize Safety for drilling " HSE"
b.Intellectual Skills: :	
1 -	Apply principles and concepts in solving problems related to well drilling and design, and Drilling Bits.

c.Professional and Practical Skills: :	
1 -	Use software in solving drilling problems
2 -	Planning of oil well Engineering
3 -	Design calculations
d.General and Transferable Skills: :	
1 -	Work in team and solve problems

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Basis of Drilling Engineering needs for Well planning.	3	2	1
Basis of Well Design related to Pressures and Temperatures.	6	4	2
Drilling Rigs (both Onshore and Offshore), Rig Systems and Rigs Power Design.	9	6	3
Basis of Drill String Design: Types and Techniques. Operationally how to prepare and run Bottom Hole Assemblies (BHA).	9	6	3
Drilling Bits: Types, Selections and Operationally how to select Optimum parameters.	6	4	2
Hole Sections.	6	4	2
Introduction to Drilling Fluids: Function, Types and Properties.	6	4	2
Safety for drilling "HSE".			

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem solving
Experiential Learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		
Final Exam	40.00		
Midterm Exam	30.00	7	
Participation	10.00		
Performance	5.00		
Quiz	5.00		

Course Notes :

Handouts

Recommended books :

1. AMOCO, Shell and Eni Drilling Manuals; Drilling Engineering Series, 2014.
2. Halliburton Sperry sun / Baroid, Schlumbergeer and BHI field practical applications
3. Well Engineering design and new technologies (SPT, Oil and Gas Journal, Drilling tools etc.)
4. IWCF and UMM communities