

**Faculty of Engineering & Technology**

**Drilling Engineering 1**

**Information :**

**Course Code :** PE 305

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Petroleum Engineering

**Instructor Information :**

Title	Name	Office hours
Associate Professor	Taher El Sebaey Taher El Fakhry	7
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Lecturer	Mohamed Ghareeb Moustafa Ahmed	
Assistant Lecturer	MOAMEN AHMED GASSER HASSAN KAMEL IBRAHIM KAMEL	
Teaching Assistant	Abdelrahman Adel Abdullah Abdelghany Kandil	
Teaching Assistant	AHMED NAGUIB ABDELAZIZ ABDELAZIZ GHONIM	
Teaching Assistant	Akram Rabie Hamed Ragheb Tobar	2
Teaching Assistant	Abdelrahman Adel Abdullah Abdelghany Kandil	

**Area Of Study :**

1. Prepare students to understand and calculate all types of pressure and temperature.
2. Develop students skills to design drill string, rotary drilling bits.
3. Selection of drilling fluids and details understanding of drilling fluids planning, operations and contamination
4. Train students for drilling programming.

**Description :**

Systems of units, down hole pressure and temperature relations, drill string design, hosting, rotary drilling bits (cone bits, PDC bits, diamond bits), bit selection, mud engineering (functions, types, properties, calculations and conditioning), rig hydraulics.

**Course outcomes :**

**a. Knowledge and Understanding: :**

1 -	Define basis of Drilling Engineering needs for Well Planning
2 -	Describe fundamentals of Well Design related to Pressures and Temperatures
3 -	Explain Drilling Rigs (both Onshore and Offshore), Rig Systems and Rigs Power Design
4 -	Explain principles of Drill String Design; Drilling Bits
5 -	Describe Drilling Hydraulics and Optimum Hydraulic Program design
6 -	Explain Drilling Fluids: Function, Types and Inhibitions
7 -	Recognize safety for drilling HSE

**b. Intellectual Skills: :**

1 -	Apply methods and techniques in solving problems related to drilling problems
2 -	Solve problem of drill string design
3 -	Apply theories and techniques in planning of oil wells problems

**c. Professional and Practical Skills: :**

1 -	Use software tool in solving drilling problems
2 -	Writing technical report on drilling operations

**d. General and Transferable Skills: :**

1 -	Work in team and solve problems
2 -	Develop communication skills

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Pressures and Temperatures	3	1	0
Drilling bottom hole assemblies design and function	4	1	1
Drilling bits	4	2	2
Drilling Fluids	5	1	2
Hydraulics	6	2	2
Cement calculations and mechanics	6	2	2
Introduction to directional drilling			

**Teaching And Learning Methodologies :**

Interactive Lecturing
Discussion
Problem Solving
Laboratory

**Course Assessment :**

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

**Course Notes :**

Handouts
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**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