

Branch: <b>DRILLING ENGINEERING</b>			Faculty:-		
Subject: <b>Drilling Machinery-II/TH-03</b>	No of periods: <b>4hrs/week</b>	Total Period: 60 week: 15	Total	End Sem exam: 80 assesment: 20	Internal

Scheduled Session: From \_\_\_\_\_ to **October - 2021**

Week	Period	Topics		Remarks
		<b>1.0 Oil Well Drill Rig</b>		
	1st & 2nd	1.1	Give a brief description about different oil well drill rigs used in both offshore and onshore.	
	3rd & 4th	1.2	Systems used in oil well drill rig. (Power generating & transmitting, Rotating and Feeding, Hoisting, Tubing, Circulating, Well head, Fishing etc.)	
		<b>2.0 Power Generating &amp; Transmitting System</b>		
	1st & 2nd	2.1	Explain the sources of power supply for oil well drill along with comparison between them	
	3rd & 4th	2.2	Calculate power requirement of power plant for oil well drill rig	
	1st & 2nd	2.3	Explain the type of drives for power transmission in oil well drilling rig.	
3rd		<b>3.0 Rotating &amp; Feeding Mechanism</b>		
	3rd	3.1	Explain requirement rotating & feeding mechanisms in oil well drill rig	
	4th	3.2	State components in rotating & feeding system	
	1st & 2nd	3.3	Explain the different systems of transmission of power to rotary table of oil well drill.	
	3rd & 4th	3.4	Explain rotating and feeding mechanism in top drive system	
	1st & 2nd	3.5	Explain different components in top drive system.	
	3rd & 4th	3.6	Enumerate different feeding mechanism and explain such.	
		<b>4.0 Hoisting Mechanism</b>		
	1st	4.1	Requirement of hoisting mechanism and Components in such (Derrick, Mast, Substructure, Hoisting line, Draw work, Travelling block, Swivel, Weight Indicator etc.)	
	2nd	4.2	Different types of Derrick & Mast along with field of application	
	3rd & 4th	4.3	Factors consideration in designing derrick & derrick load calculation	
	1st & 2nd	4.4	Calculate the mechanical advantages of block & tackle system.	
	3rd & 4th	4.5	Hoisting power calculation.	
	1st & 2nd	4.6	Components of draw work (Hoisting drum, cathead, clutch & break along with types)	
		<b>5.0 Drill String</b>		
	3rd	5.1	State the components of rotary drill string and explain their functions.	
		5.2	<b>Tubings</b>	
	4th & 1st	5.2.1	Kelly, Drill pipe, Drill collar, Drill string auxiliaries along with types & functions.	
	2nd	5.2.2	Reason of drill pipe failure.	
	3rd & 4th	5.2.3	Drill string design.	
		5.3	<b>Bits</b>	
	1st	5.3.1	State the different types of bits used in oil well drilling.	
	2nd	5.3.2	Bit design features.	
	3rd	5.3.3	Possible causes of bit dullness & remedies	
	4th	5.3.4	Bit selection methods	
		<b>6.0 Casing &amp; Well Head Fittings</b>		
	1st	6.1	<b>Casing</b>	
		6.1.1	State the different casing used in oil well drilling & their functions.	
		6.1.2	Explain the different designs of well casings.	
	2nd	6.1.3	Give the specifications of different casings.	
		6.1.4	Enumerate the casing appliances used.	
	3rd & 4th	6.1.5	Explain factors influence casing design & design criteria of casing.	

12.1		6.2	Well head fittings.			
	1st		6.2.1	Explain the procedure of installation of wellhead fittings & function of wellhead fittings.		
	2nd		6.2.2	State the different types of B.O.P. and explain the mechanism involved.		
			6.2.3	State the function of B.O.P.		
	3rd		6.2.4	Control mechanism of B.O.P.		
	4th		6.2.5	Operational procedure of B.O.P.		
12.2	7.0 Circulating system					
	1st	7.1	Equipments used in Circulating system			
	2nd	7.2	Classify the different types of pumps used in oil fields.			
	3rd	7.3	Derive the formula for fluid pumping rate (GPM/Volume) of a duplex double action pump operating at 100% volume efficiency.			
	4th	7.4	Derive the formula for hydraulic H.P. of pump.			
12.3	1st	7.5	Derive the formula for the horsepower available for speedy digging of hole due to mud jetting action of bit.			
	2nd	7.6	Work out some problems on size of pumps for lifting of drill cuttings efficiently.			
	3rd	7.7	Explain the steps to be taken against cavity and water hammer of reciprocating pump.			
	8.0 Fishing					
12.4	4th	8.1	Define Fish & Fishing.			
	1st	8.2	Describe the probable causes of fishing in oil wells.			
	2nd	8.3	Enumerate the fishing tools used in oil well drilling.			
	3rd	8.4	Derive the formula of calculating the depth of a fish.			
	4th	8.5	Explain the various techniques to be adopted for fishing operation.			

#### SYLLABUS COVERAGE UP TO INTERNAL ASSESSMENT

Chapters- 1 & 2

NOTES:-

**Lecturer (Drilling)**  
**O.S.M.E., Keonjhar**

**Senior Lecturer (Drilling)**  
**OSME, Keonjhar**