

Al-Ayen University / Petroleum Engineering College

Template of Course Specification

Name and Scientific title of the subject instructor: Dr. Raed H. Allawi

Name of Course: Drilling Engineering I

Course Specification

		P 11	717			
l.	Teac	ching Institution	Al-Ayen University / Petroleum Engineering College			
	Univ	versity Department / Center	Petroleum Engineering College			
3.	Cou	rse Title / Code	Drilling Engineering I			
ŀ.	Prog	gram(s) to which it contributes	B.Sc.			
5.	Mod	les of Attendance offered	Class attendance			
5.	Sem	ester/Year	1 st and 2 nd , 2022-2023			
7.		nber of hours tuition (total)	90			
3.		e of production/r <mark>evi</mark> sion of this	Jan. 2023			
		eification				
١.		Aims of the Course: The student will know the following:				
	1	8 8 11 8				
	2	Classification of drilling operations				
	3	Drilling Fluid.				
	4	Properties and functions of drilling fluid				
	5	Types and properties of clay in water.				
	6	Types of drilling fluids.				
	7	Drilling hazards dependent on mud control				
	8					
	9	Drilling methods (cable tool drilling, rotary drilling), basic				
		component of rotary drilling equ	ipment.			
	10	Drilling string and accessories				
	11	Types of bits				
	12	Drilling Hydraulics				
	13	Casing of oil wells, Functions of casing, types of casing, strings, parameters of casing design, selection of casing and bit types, design of string, graphical design of casing.				
	14	Cementing of oil wells, classification and properties of cements, classification of cementing operations, cementing equipment, methods and calculations of cementing				
	15					
0.	Learning Outcomes, Teaching, Learning and Assessment Methods					



A	Knowledge and understanding: This course aims to explain the
	principle of drilling engineering in detail so the student can analyze
	drilling problems and develop appropriate solutions.
В	Subject-specific skills: The student will have sufficient skills to
	manage successful drilling operations, diagnose drilling problems, and
	deal with them according to international standards.
C	Assessment methods: The assessment method are divided into three
	parts; quizzes, monthly exams, and final exams.
D	Thinking Skills: Providing a skilled staff to the scientific community
	that can effectively contribute to develop and tackle the relevant
	engineering problems.
Е	Teaching and learning methods: The teaching is performed
	theoretically based on theoretical concepts of Drilling Engineering
	and laboratory testing.
F	General and Transferable Skills (other skills relevant to
	employability and personal development): The most important
	skills are the knowledge and capability to provide scientific proposals
	to tackle a given engineering problem.

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11. Course Structure			51		
Week	Hours	Required Teaching Outputs	Unit/Module or Topic Title	Teaching Methods	Assessment Methods
1.	3	Student will understand	Introduction of Drilling Engineering	Class attendance and Laboratory	Lab. Report, Quizzes, monthly exams, and final exams
2.	3	Student will understand	Classification of drilling operations	Class attendance and Laboratory	Lab. Report, Quizzes, monthly exams, and final exams
3.	3	Student will understand	Drilling Fluid.	Class attendance and Laboratory	Lab. Report, Quizzes, monthly exams, and final exams
4.	3	Student will understand	Properties of drilling fluid	Class attendance and Laboratory	Lab. Report, Quizzes, monthly exams, and final exams
5.	3	Student will understand	functions of drilling fluid	Class attendance and Laboratory	Lab. Report, Quizzes, monthly exams, and final exams
6.	3	Student will understand	Types and properties of clay in water	Class attendance	Lab. Report, Quizzes,



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				and Laboratory	monthly exams, and final exams
7	3	Ctudout will	True as of duilling	Class	
7.	3	Student will understand	Types of drilling fluids.		Lab. Report,
		understand	Huias.	attendance	Quizzes,
				and	monthly exams,
•		0 1 11	D 1111 1 1	Laboratory	and final exams
8.	3	Student will	Drilling hazards	Class	Lab. Report,
		understand	dependent on	attendance	Quizzes,
		100	mud control	and	monthly exams,
				Laboratory	and final exams
9.	3	Student will	Drilling mud	Class	Lab. Report,
		understand	calculations	attendance	Quizzes,
		300		and	monthly exams,
		21		Laboratory	and final exams
10.	3	Student will	Mud density	Class	Lab. Report,
	1.5	understand		attendance	Quizzes,
		4		and	monthly exams,
				Laboratory	and final exams
11.	3	Student will	Shear stress and	Class	Lab. Report,
		understand	shear rate	attendance	Quizzes,
				and	monthly exams,
				Laboratory	and final exams
12.	3	Student will	Plastic viscosity	Class	Lab. Report,
		understand	and apparent	attendance	Quizzes,
		diacistana	viscosity	and	monthly exams,
			Viscosity	Laboratory	and final exams
13.	3	Student will	Effective	Class	Lab. Report,
15.		understand	viscosity and	attendance	Quizzes,
		unacistana	Yield point	and	monthly exams,
			Tield point	Laboratory	and final exams
14.	3	Student will	Gel strength	Class	Lab. Report,
14.	3	understand	Get strength	attendance	Quizzes,
		unuerstanu		and	
		ri .	20256		monthly exams, and final exams
15	3	C4 1 4:11	DII - C 1111	Laboratory	
15.	3	Student will	PH of drilling	Class	Lab. Report,
		understand	Mud	attendance	Quizzes,
			pagette.	and	monthly exams,
	_		20	Laboratory	and final exams
16.	3	Student will	Drilling methods	Class	Lab. Report,
		understand	لتقليه لملد	attendance	Quizzes,
		01 01	CENTINITY .	and	monthly exams,
		AL-A	EN UNIVE	Laboratory	and final exams
17.	3	Student will	cable tool	Class	Lab. Report,
		understand	drilling	attendance	Quizzes,
				and	monthly exams,
				Laboratory	and final exams
18.	3	Student will	rotary drilling	Class	Lab. Report,
		understand	_	attendance	Quizzes,



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				and	monthly exams, and final exams
10		G . 1	D .	Laboratory	
19.	3	Student will	Basic component	Class	Lab. Report,
		understand	of rotary drilling	attendance	Quizzes,
			equipment	and	monthly exams,
				Laboratory	and final exams
20.	3	Student will	Drilling string	Class	Lab. Report,
		understand	and accessories	attendance	Quizzes,
		1	-/	and	monthly exams,
		200		Laboratory	and final exams
21.	3	Student will	Types of bits	Class	Lab. Report,
		understand		attendance	Quizzes,
		13		and	monthly exams,
				Laboratory	and final exams
22.	3	Student will	Drilling	Class	Lab. Report,
	3.5	understand	Hydraulics	attendance	Quizzes,
		1 4		and	monthly exams,
		1 3		Laboratory	and final exams
23.	3	Student will	Casing of oil	Class	Lab. Report,
		understand	wells,	attendance	Quizzes,
	1	777		and	monthly exams,
				Laboratory	and final exams
24.	3	Student will	Functions of	Class	Lab. Report,
	(4)	understand	casing	attendance	Quizzes,
	1 5	1	U	and	monthly exams,
				Laboratory	and final exams
25.	3	Student will	Types of casing	Class	Lab. Report,
	1	understand	and casing	attendance	Quizzes,
			design	and	monthly exams,
	1 3	-		Laboratory	and final exams
26.	3	Student will	Cementing of oil	Class	Lab. Report,
		understand	wells	attendance	Quizzes,
	- 23		.,,	and	monthly exams,
			20121	Laboratory	and final exams
27.	3	Student will	classification and	Class	Lab. Report,
		understand	properties of	attendance	Quizzes,
			cements	and	monthly exams,
			1111111	Laboratory	and final exams
28.	3	Student will	classification of	Class	Lab. Report,
	_	understand	cementing	attendance	Quizzes,
			operations	and	monthly exams,
		AL-A	SP CLUMONIO	Laboratory	and final exams
29.	3	Student will	cementing	Class	Lab. Report,
		understand	equipment,	attendance	Quizzes,
		anacibuna	methods and	and	monthly exams,
			calculations of	Laboratory	and final exams
			cementing	Lucciucory	and mul Camin
30.	3	Student will	Hydraulics of	Class	Lab. Report,
50.	3	understand	primary	attendance	Quizzes,
		unucistanu	ринагу	attenuance	Quizzes,



	cementing	and	monthly exams,
	operations.	Laboratory	and final exams

12.	Infrastructure		
Required	 Well Engineering and construction, Hussain Rabia. 		
reading:	 Drilling Engineering Workbook, Baker Hughes, 1995. 		
·CORE	 Petroleum engineering handbook, Drilling and well 		
TEXTS	completions, C.Gatlin.		
-COURSE	 Applied driling engineering, A.T.Bourgoyne & F.S. Young 		
MATERIA	JR. SPE text book series , vol.2.		
LS	Hydrocarbon exploration and production, J.Frank, Pub.		
· OTHER	Elsevier, 1st edition, 1988.		
	 Formulas_and_Calculations_for_Drilling_Production_and_ 		
	Workovr, Norton J. Lapeyrouse.		
	Oil and Gas Field Development Techniques, Barbara Brown		
	Balvet		
Community	Scientific collaboration with other academic staff in the relevant		
-based	field is one of our future plan to develop the program.		
facilities)	8		
include for			
example,			
guest	127		
Lectures,			
internship,	U U		
field	7 57		
studies)			

13. Admissions	Admissions			
Pre-requisites				
Minimum number of students	10			
Maximum number of students	30			

