

	<p>Ministry of Higher Education and Scientific Research - Iraq</p> <p>University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department</p>	
---	---	---

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Drilling Engineering II (Casing design and Cementing)		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	OGE321			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGIII	Semester of Delivery		2
Administering Department	OGE	College	College of engineering	
Module Leader	Salam Jabar Hussain		e-mail	salam.jabar@uowa.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.	
Module Tutor	NA		e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail	

Scientific Committee Approval Date	01/06/2023	Version Number	1.0
------------------------------------	------------	----------------	-----

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	OGE311	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>Drilling Engineering II is a course designed to deepen students' understanding of key aspects of well construction, focusing on casing and cementing design. The course provides a comprehensive overview of casing design, including selection criteria, casing point determination, and the role of various oilfield tubulars and connections. Students will analyze critical design factors such as collapse, burst, and axial loads, and will explore the concept of equivalent yield strength in casing design.</p> <p>The course also offers an in-depth look at cementing operations, beginning with an overview of the cementing process and progressing to a detailed study of cement properties, types of cementing, and the use of additives to tailor cement performance. Students will learn to design effective cementing programs for both primary and remedial operations, including plug cementing techniques.</p> <p>By the end of the course, students will be equipped with the knowledge and analytical</p>
--	---

	skills necessary to contribute to the planning and execution of safe and efficient casing and cementing operations in oil and gas wells.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Drilling Engineering II significantly contributes to the professional component of the petroleum engineering curriculum by equipping students with the practical and analytical skills essential for well design and construction. The course bridges theoretical engineering principles with real-world applications, focusing on the design and selection of casing and cementing systems — two critical components in ensuring well integrity, safety, and efficiency. Through detailed analysis of casing loads (collapse, burst, and axial), casing point selection, and cementing design, students gain a robust understanding of the decision-making processes and engineering standards used in the industry. The course also emphasizes problem-solving, technical communication, and the application of industry-relevant tools and methodologies. These competencies are directly aligned with professional practice and prepare students for engineering roles in drilling, completions, and well integrity management.
Indicative Contents المحتويات الإرشادية	<p>In this course, students will learn:</p> <ul style="list-style-type: none"> • A comprehensive overview of the casing design and well cementing processes. • This course presents the primary functions of oil well casing, the various types of casing strings used, the procedures used in the design of casing strings. • The course also gives an overview of primary objectives of cementing, the test procedures used to determine if the cement slurry and set cement have suitable properties for meeting these objectives, • Study the common additives used to obtain the desirable properties under various well conditions, the techniques used to place the cement at the desired location in the well.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module will be to encourage students to ask and answer questions, as well as to train students to implement many practical exercises in the laboratory (which covers the majority of what is covered in theoretical lectures), which will give students the ability to carry out the work required of them in their practical lives in the future.

--	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Casing Design overview
Week 2	Casing Design and Selection Criteria
Week 3	Types of oilfield tubulars and connections
Week 4	Casing point selection and size determination
Week 5	Typical design factors
Week 6	Collapse load
Week 7	Burst load
Week 8	Axial Load, and Equivalent yield strength
Week 9	Cementing process overview
Week 10	Cement Properties
Week 11	Types of Cementing
Week 12	Oil Well Cement Additives
Week 13	Cementing Design Process
Week 14	Primary cementing
Week 15	Remedial cementing and Plug cementing
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Sand content by sand content kit
Week 2	Resistivity of mud by analog resistivity meter
Week 3	Stability emulsion mud by electric stability meter
Week 4	Water and oil solid content by 20ml, retort kit
Week 5	Density of cement by pressurized mud balance
Week 6	Consistency of cement by atmospheric consistometer model 60
Week 7	Preparation for the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> Bourgoyne, Adam T., Keith K. Millheim, Martin E. Chenevert, and Farrile S. Young. "Applied drilling engineering." Rabia, Hussain. Well engineering & construction. London: Entrac Consulting Limited. 	
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

