



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fundamental of Petroleum Engineering		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PENG215			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		Third
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Dr. Murtadha Doghaim Abdullah		e-mail	Murtadha.abdullah@alayen.edu.iq
Module Leader's Acad. Title	lecture		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	9/2/2025		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of petroleum Engineering through the application of techniques. 2. Gives insights into the role of petroleum engineering in the search and application. 3. The module covers a number of measurement methods and how these are used. to determine important fundamentals parameters such as Bulk volume, grain volume, pore volume and porosity concept 4. This is the basic subject for all petrophysical properties. 5. To understand permeability ,capillary pressure , wettability. 6. To perform sp-log and gamma ray analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how A geophysicist adds to the information of a geologist by studying the physics of the earth. 2. List the Petroleum exploration: a process of determining the location of petroleum reservoir. This process, Direct indications ,Geological methods, Geophysical methods 3. physical measurement of subsurface condition made from surface location. There are three types of methods, which are: • Gravitational (gravity survey)• Magnetic survey• Seismic survey. 4. Summarize what is meant by a Migration of Petroleum. 5. Discuss the Parameters Controlling Petroleum Occurrence . 6. Describe Lithology of Petroleum Reservoirs t. 7. classified Petroleum Traps. 8. Classification of reservoirs fluid types 9. Drilling rig A modern rotary rig as consists of several systems but the power system. hoisting system. rotation system. circulation system. well control (blowout prevention system). 10. What is well completion . 11. Porosity Logs - General.
Indicative Contents المحتويات الإرشادية	This course is a "must have" for anyone working with the subsurface within the life application. Students will understand and employ the scientific method of inquiry to draw conclusions based on verifiable evidence. Students will explain the impact of scientific theories, discoveries, or technological changes on society. Students will demonstrate critical thinking skills in the analysis of scientific data. understand that real data can be uncertain and that one has to use common sense and understanding in order to find good answers to the interpretation problems

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Teaching/Learning Strategies include: 1- Direct Instruction in classroom, 2 hrs per week. 2- Classroom Discussions 3- tests, quizzes, class participation, projects, homework assignments, presentations. Methods of assessment for students. 1- Compulsory exercises 2- Quarterly exams. 3- Discussions and assignments for project. *The overall assessment for this course is as follows: Annual pursuit of 30 points from the total mark, which includes assignments, oral examinations and quarterly in addition to presentations. *70 marks for the final exam
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوع النظري

	Material Covered
Week 1	Introduction – of petroleum engineering
Week 2	Origin of petroleum
Week 3	Learn the students the importance of learning the rock science
Week 4	Understanding the exploration methods including gravity, magnetic, and seismic methods
Week 5	. Applications of Porosity . Variation of porosity with depth
Week 6	Saturation
Week 7	Permeability . Permeability Classification , Darcy's law
Week 8	Rock compressibility , Wettability , capillary pressure
Week 9	Oil PVT Properties , Gas PVT Properties, Compressibility Factor (Z-Factor)
Week 10	Recovery. Reservoir Drive Mechanisms. Secondary Recovery. Tertiary Recovery (EOR)
Week 11	Reservoir type -Binary system
Week 12	Drilling Engineering. Type of rig, type of drilling fluid, hosting system, rotary system
Week 13	Well completion. Completion Design criteria. Well completion equipment
Week 14	Well log . Resistivity and Measurement Concept. Resistivity Application
Week 15	WELL LOGGING – PART 3 [SP, GR, CAL]

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	" Fundamentals of petroleum engineering collage of Eng.	Yes
Recommended Texts	1- Fundamentals of petrol textbook 2- Fundamentals of petroleum engineering	No
Websites	None	

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.				