



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Oil properties		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PENG214			
ECTS Credits	2			
SWL (hr/sem)	97			
Module Level	2	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	MSc Hasan Ali Azeez		e-mail	Hasan.Ali@alayen.edu.iq
Module Leader's Acad. Title	lecture	Module Leader's Qualification	MSc	
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	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Contributing in new ideas creation for development devices used in experiments. 2. Experience of manufacturing devices that simulate the work of approved standard devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding Physical and Chemical Properties: Learning aids in comprehending the physical and chemical properties of oil, including density, freezing and boiling points, and chemical composition. This contributes to analyzing oil and understanding how these properties impact its various uses. 2. Identifying Extraction Methods and Techniques: Learning helps grasp the methods used for extracting and refining oil. This involves studying purification and refining processes that result in diverse oil products such as gasoline and diesel. 3. Applications in Industries and Economies: Learning extends to exploring how knowledge of petroleum properties influences its diverse applications in industries, from manufacturing to energy production. Understanding these applications contributes to insights into the economic significance and global impact of the oil sector. 4. Students will demonstrate a comprehensive understanding of fundamental principles governing oil properties, including viscosity, density, and thermal conductivity. 5. Students will be able to analyze and interpret oil property data to make informed decisions in the design and operation of oil-related processes 6. Students will be able to understand API and how will evaluate price and quality of oil and its products.
Indicative Contents المحتويات الإرشادية	1. Developing the skill of conducting experiments, extracting results, presenting them in the form of standard curves, and comparing them with the curves of manufacturers. 2. Encourage teamwork in the laboratory work environment in the form of groups. 3. Develop a spirit of creativity in the method of conducting experiments.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Monthly exams • daily exams • Homework • Exercise • Evaluating the performance in the laboratory and evaluating the percentage of completion of laboratory tasks

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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	97		

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
	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 الاسبوعي النظري	
	Material Covered
Week 1	Crude oils (chemical composition, classification, properties)
Week 2	Density, specific gravity and coefficient of expansion
Week 3	Viscosity , molecular weight
Week 4	Vapor pressure, specific heat, laten heat
Week 5	Heat of combustion, boiling range
Week 6	Flash point

Week 7	Sulfur content, aniline point
Week 8	Penetration number
Week 9	Crude oil evaluation
Week 10	fractional distillation and TBP curves
Week 11	Analysis of fraction, dehydration of crude oil
Week 12	Natural gas properties
Week 13	Oil field water properties
Week 14	Pour point
Week 15	softening point
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Cloud points
Week 2	Lab 2: Pour points
Week 3	Lab 3: Standard Test Method for Reid Vapor pressure of Petroleum Product (ASTM D323)
Week 4	Lab 4: Standard Test Method for Distillation of Petroleum Products (ASTM D86)
Week 5	Lab 5: Standard Test Method for Kinematics Viscosity of Transparent and Opaque Liquids (ASTM D-445)
Week 6	Lab 6: Standard Test Method for API gravity of Petroleum Products by Hydrometer method (D 287)
Week 7	Lab 7: Standard Test Method for Softening Point of Asphalts and Tar Pitches (ASTM D36)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	The Properties of Petroleum Fluids, William D. McCain, 2008	Yes
Recommended Texts	Petroleum Engineer's Guide to Oil Field Chemicals and Fluids, Johannes Fink, 2011	No
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.				