

	Ministry of Higher Education and Scientific Research - Iraq Al-Naji University College of Engineering AI Engineering Department	
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Chemistry		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CEA1205			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	UGI	Semester of Delivery		two
Administering Department	AI Engineering	College	Engineering	
Module Leader	Sara Kahtan		e-mail	sara.kahtan@alnaji-uni.edu.iq
Module Leader's Acad. Title	Assis. Lecturer	Module Leader's Qualification	MSc.	
Module Tutor		e-mail		
Peer Reviewer Name	Name	e-mail		
Scientific Committee Approval Date		Version Number	1.0	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To understand the principles and applications of modern chemistry Instrumentation, experimental design and data analysis. 2. To distinguish between Analytical chemistry and other branches of chemistry 3. To understand the properties (physical and chemical) and the benefits of materials. 4. To perform the methods of concentration evaluation. 5. To understand the types of thermos chemical reactions, reaction constant, the factors affecting on them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introduce basic definitions and introductory concepts of analytical chemistry. 2. Show the different methods to prepare solutions with different Concentrations and PH. 3. Explains the methods to control the precipitation process. 4. Show the methods for the quantitative calculations of oxidation reduction reactions. 5. Explains how different quantitative measurements equipments works for the calculations of concentrations, such as atomic absorption spectrophotometry, UV spectrometer, gas chromatography ... etc. 6. Provide a background to higher level courses involving dealing with different solutions. 7. Provide a strong quantitative and analytical understanding to the students in order to be able to deal with different solution concentrations and its preparation in chemical industry
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to analytical chemistry, stoichiometric calculations, and periodic table. [8 hrs] Calculation of Normality, Molarity, and Molality, evaluation of density, percent[8 hrs] Equilibrium in the acids and bases, Indicators of bases and acids, Equilibrium in precipitation [8 hrs] Partial precipitation, analysis using oxidation and reduction [8 hrs] Factors effecting the chemical reaction, calculation of dilution [8 hrs] Calculation of equilibrium constant and solving examples [8 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to give the students background and strong basic to higher level courses involving dealing with different solutions during dealing with solutions in laboratory. .This will be achieved through classes, interactive tutorials, asking questions, discussions and solving samples of problems in class and homework.

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	72/15=4.8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	53/15=3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4, 10	LO #1, #2, #3 ,#4, #5, #6,#7 and #8
	Assignments	1	5% (5)	7	LO #1, #2, #3, #4 ,#5, #6, # 7 and #8.
	Home works	1	5% (5)	8	LO #2, #3, #4 ,#5, # 7 and #8.
	Report	1	10% (10)	10	LO #3 and #6
	laboratory	1	10(10%)	12	
Summative assessment	Midterm Exam	2hr	10% (10)	6,13	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Chemistry and its branches
Week 2	Solutions terminology, Types of solution
Week 3	Expressions of concentration of solutions
Week 4	Dilutions, Aqueous solutions , Ionic solutions
Week 5	Qualitative and Quantitative analysis, Gravimetric analysis, Volumetric analysis
Week 6	Mid exam 1
Week 7	Chemical equilibrium
Week 8	Acids and Bases, pH Definition
Week 9	Acid – Base Titration, Buffer solutions
Week 10	Gases: Ideal gas laws, Boyle, s law,
Week 11	Charles low, Gay- Lussac, s low
Week 12	The combined gas low
Week 13	Mid exam 2
Week 14	Electrochemistry
Week 15	review

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction , Chemical glassware, Laboratory safety practices
Week 2	Melting and Boiling point
Week 3	Prepare standard solution
Week 4	Determine the exact concentration of HCl solution (by titration)
Week 5	Identify an unknown chemical mixture
Week 6	Simple or fractional distillation
Week 7	review

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Douglas A. Skoog / fundamentals of analytical chemistry	Yes
Recommended Texts	Jeffrey S. Gaffny Nancy A. Marley / General Chemistry for Engineering	No
Websites	https://pubs.acs.org/journal/ancham https://www.nature.com/subjects/analytical	

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.