	Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Physics Department	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Analytical chemistry**	**Module Delivery**	
Module Type	**Basic**	☒**Theory** ☒**Lecture** ☒**Lab** ☒**Tutorial** ☒**Practical** ☒**Seminar**	
Module Code	**CRANACHE**		
ECTS Credits	**8**		
SWL (hr/sem)	**2**		
Module Level	1	**Semester of Delivery**	1
Administering Department	forensic science	**College**	Science
Module Leader	Dr. Shaimaa Imad Ali	**e-mail**	shaimaa.emad@nahrainuniv.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Shaimaa Imad Ali	**e-mail**	shaimaa.emad@nahrainuniv.edu.iq
Module lab.	م.م سجى صبحي عبود م.م شهد فاضل علي م.م عائشة جمال م.م. مريم محمد جبر م.م. سنا باسم محمد م.م. مديحة حامد محمود م.م. رغد فلاح حسن م.م. بسمة سعدي طالب	**e-mail**	Saja@nahrainuniv.edu.iq shahad_f@nahrainuniv.edu.iq maryam.mohammed@nahrainuniv.edu.iq sana.basim@nahrainuniv.edu.iq madeha.almahmood@nahrainuniv.edu.iq raghad.falah@nahrainuniv.edu.iq basma.saadi@nahrainuniv.edu.iq
Peer Reviewer Name	Shaimaa Imad Ali	**e-mail**	shaimaa.emad@nahrainuniv.edu.iq

Review Committee Approval		**Version Number**	

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 Aims أهداف المادة الدراسية	1.The course aims to acquire practical skills related to an unknown acidic solution by adding a basic solution of known concentration, or vice versa, and the role of the reagent in titrating chemical solutions. 2. Providing practical support for the related analytical chemistry course through laboratory activities and educational programs. The goal is to acquire basic concepts of titration chemistry and preparation of solid and liquid solutions. 3. Students will learn a variety of practical techniques in the synthesis, characterization and handling of a variety of materials and solutions used in analytical chemistry. 4. Enhancing students' learning and helping them understand the full picture of the field of analytical chemistry.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Fine glassware and specialty reagents can be used safely with general guidelines and basic knowledge of the rare species often encountered in analytical chemistry laboratories. 2. Use common instruments in the chemical laboratory. 3.Interpret results and laboratory data correctly within the inherent limitations of accuracy and report results in an open notebook using appropriate and acceptable descriptive notation that is understandable and reproducible. 4.Write scientific journals and reports that omitted scientific data clearly and in detail and make logical and definitive determinations based on experimental data44.		
Indicative Contents المحتويات الإرشادية	تجارب باستعمال الاجهزة التحليلية كما هو مفصل في دليل المختبر		

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Providing students with the basics and additional topics related to thinking outcomes - Discussing lesson topics that require thinking and analysis, with students participating in a mini-discussion group during the lecture. - Raising a set of intellectual questions during the lecture time, which increases and motivates students to analyze, conclude and reach the correct answer. - Giving students homework that requires self-explanation - Linking the lecture curriculum to practical applications, especially in our daily lives.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	
	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	Analytical methods (Introduction, Classification of analytical methods)
Week 2	Instrumental Analysis, Precision and Accuracy
Week 3	Random Errors, Systematic Errors, Instrumental Errors
Week 4	Statical analysis, Normal Distribution
Week 5	Electromagnetic Radiation
Week 6	Med exam
Week 7	UV-VISIBLE ABSORPTION SPECTRA
Week 8	Fluorescence and phosphorescence (photoluminescence)
Week 9	Spectral analysis methods
Week 10	UV/visible photometers and Spectrophotometers
Week 11	Beer-Lambert Law, UV/visible: Applications
Week 12	Infra-Red Absorption Spectroscopy, Fourier Transform Infrared
Week 13	Atomic absorption spectroscopy
Week 14	Gas chromatography
Week 15	High performance liquid chromatography (HPLC)
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Safety rules
Week 2	Lab 2: Laboratory equipment's
Week 3	Lab 3: PH meter measurement
Week 4	Lab 4: measurement of maximum wave length (ʎ max) of $KMnO_4$ and $K_2Cr_2O_7$ individually
Week 5	Lab 5: Determination of Mn ion concentration by spectroscopic method
Week 6	Lab 6: Spectroscopic determination of Manganese-Coronium binary mixture
Week 7	Lab 7: Spectroscopic determination of formulas of complex ion using Mole-Ratio Method

Week 8	Lab 8: Spectroscopic determination of iron by 1,10-phenanthroline method
Week 9	Lab 9: Med exam
Week 10	Lab 10: Thin layer chromatography
Week 11	Lab 11: Final exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	***1-*** التحليل الكيمياوي الالي , تاليف : د.فاضل جاسم محمد ,د.صبري ميخائيل فروحة 2الكيمياء التحليلياة الاساساية الحدي اة الاساسايات النظرياة في طرق التحليل الالي تاليف : -- د.معاين ساكندر د.عبد المحسن الحيدري د.هادي كاظم عوض ,د. جواد سلمان البدري	yes
Recommended Texts	Principles of instrumental analysis 6th Edition, 2007. Douglas A. Skoog, James Holler, Stanly R.Crouch.	yes
Websites	Understanding Chemistry, INSTRUMENTAL ANALYSIS. Jim Clark 2008	

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي