

MODULE DESCRIPTOR FORM

Module Information			
Module Title	GENERAL CHEMISTRY	Module Delivery	
Module Type	CORE	<input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Practical	
Module Code	FOR11004		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level		1	Semester of Delivery
		1	
Administering Department	Forensic Evidence	College	College of Sciences
Module Leader	Mohammad Abbas Jabr	e-mail	mohammed.jebur@uowa.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc
Module Tutor	Ashraf Hussein Saleh	e-mail	Ashraf.H@uowa.edu.iq
Peer Reviewer name	Ahmed Mousa	e-mail	ahmed.mo@uowa.edu.iq
Review Committee Approval	2025-12-20	Version Number	V 1.0

Relation With Other Modules			
Prerequisite module	NO	Semester	-
Co-requisites module	NO	Semester	-


 أ.م.د. شيما حسيب نونل
 ٢٠٢٥ - ٢٠٢٦



Department Head Approval




 أ.م.د. شيما حسيب نونل
 ٢٠٢٥ - ٢٠٢٦

Dean of the College Approval

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	<p>This course introduces fundamental chemical concepts and laboratory techniques with a focus on forensic science applications. Students will gain hands-on experience in measurement, chemical reactions, analytical chemistry, and the use of basic instrumentation</p>
Module Learning Outcomes	<ul style="list-style-type: none">• Understand atomic and molecular structures, bonding, and periodic trends.• Perform stoichiometric and concentration calculations.• Demonstrate knowledge of states of matter, thermochemistry, kinetics, equilibrium, acids, bases, and electrochemistry.• Apply analytical chemistry methods such as titration, gravimetric and volumetric analysis, and spectrophotometry.• Operate laboratory equipment safely and maintain accurate records.• Relate chemical principles to forensic applications, such as drug testing and trace evidence analysis. <p>Practical Syllabus Outline:</p> <ul style="list-style-type: none">- The syllabus is divided into two semesters, each covering theoretical topics and corresponding laboratory activities.
Indicative Contents	

Learning and Teaching Strategies

Strategies	<ul style="list-style-type: none"> - Proper use of glassware and measurement instruments. - Preparation of solutions and titration techniques. - Accurate data collection and error analysis. - Understanding and application of MSDS and safety protocols. - Maintenance of laboratory notebooks and report writing.
-------------------	--

Student Workload (SWL)

Structured SWL (h/sem)	63	Structured SWL (h/w)	4.2
Unstructured SWL (h/sem)	87	Unstructured SWL (h/w)	5.8
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number		Weight (Marks)		Week Due	Relevant Learning Outcome
		TH	LAB	TH	LAB		
Formative assessment	Quizzes	2	2	4	10	15 and 1	3,7
	Homework assignment	2	1	4	10	6and 13	1,8
	Onsite Assignments	-	-	-	-	Continuous	All
	Projects	1	7	2	10	14	All
Summative assessment	Midterm Exam	1		10		7	
	Final Exam	3hr		50		15	
Total assessment				100 Marks			

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Measurement & Units Laboratory safety; Measurement of volumes and masses.
Week 2	Atomic Structure Flame tests and emission spectra.
Week 3	Stoichiometry Gravimetric determination of a compound.
Week 4	Chemical Reactions Observation and classification of reaction types.
Week 5	States of Matter Gas law verification using $PV = nRT$.
Week 6	Solutions Preparation of standard solutions; Freezing-point depression.
Week 7	Bonding & Geometry Molecular models and polarity studies.
Week 8	Thermochemistry Calorimetry experiment to measure enthalpy changes.
Week 9	Kinetics Reaction rate determination; Activation energy calculation.
Week 10	Equilibrium Study of equilibrium shifts using the Fe^{3+}/SCN^- system.
Week 11	Acids & Bases Titration techniques; Buffer preparation.
Week 12	Solubility Equilibria Determination of solubility product (K_{sp}).
Week 13	Forensic Mini-Project pH or ion analysis in simulated evidence samples.
Week 14	Thermodynamics Determination of Gibbs free energy using electrochemical cells.
Week 15	Electrochemistry Construction of galvanic cells; Verification of the Nernst equation.

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Safety rules and laboratory equipment
Week 2	The pH and indicators (pH)
Week 3	Discussion of reports
Week 4	Discussion of Project 1
Week 5	Acid and base standards
Week 6	Discussion of reports
Week 7	Preparation of sodium hydroxide
Week 8	Discussion of reports
Week 9	Discussion of Project 2
Week 10	Effect of concentration on reaction rate
Week 11	Discussion of reports
Week 12	Preparation and reaction of barium peroxide
Week 13	Discussion of reports
Week 14	Calculation of water content in hydrated salt
Week 15	Discussion of Project 3

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Fundamental of Analytical Chemistry, Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch	
Recommended Texts	<ul style="list-style-type: none"> • Saferstein, R. Criminalistics: An Introduction to Forensic Science. Pearson. • Houck, M. & Siegel, J. Fundamentals of Forensic Science. Academic Press. • Butler, J. Forensic DNA Typing: Biology, Technology, and Genetics of STR Markers. Elsevier. <p>Alberts, B. Molecular Biology of the Cell. Garland Science.</p>	
Websites	https://sciences.uodiyala.edu.iq	

APPENDIX:

GRADING SCHEME

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

Note:

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.