Level Two
(**UGII**)
Semester-Three

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Gravimetric Analytical Chemistry			**Module Delivery**	
Module Type	Core			☒Theory ☐Seminar ☒Lab ☒Tutorial ☐ Practical ☐ Seminar	
Module Code	CHE 23114				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dr. Raghad Sinan Abdulsattar Dr. Wijdan Shakir Khayoon		**e-mail**	raghad.sinan@sc.uobaghdad.edu.iq Wijdan.khayoon@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**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 ApprovalDate	07/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Volumetric Analytical Chemistry (CHE 1217)	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Objectives أهداف المادة الدراسية	1. The objective of this semester is to provide comprehensive knowledge of the chemical principles that hold particular significance in the field of analytical chemistry. 2. The program aims to train specialists in analytical chemistry and its practical applications, enabling them to address the developmental needs of the country and fulfill the demands of the job market in governmental institutions and various industry sectors. 3. The program strives to cultivate a well-educated generation that values scientific knowledge as a solid foundation, equipping them to drive transformative changes, employ scientific methods in analysis and thinking, and adapt to technological advancements to meet evolving human needs. 4. The program actively contributes to strengthening and reinforcing the University's ties with society through the implementation of advisory counseling, training programs, and the professional development of faculty and administrative staff. 5. The program's primary focus is to prepare graduates with specialized knowledge in chemist who can actively contribute to the country's development. 6. The program encourages outstanding individuals in the field of analytical chemistry to serve as teaching assistants, nurturing their growth and potential to become integral members of the academic teaching staff in the future.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***A. Cognitive goals*** 1- The objective of the course is to provide students with a solid foundation in analytical chemistry, enabling them to comprehend and grasp the fundamental concepts of the field. 2- The course aims to equip students with knowledge and understanding of the scientific principles, laws, and practical applications of chemistry. It fosters logical and scientific analysis skills and the ability to interpret chemical phenomena. ***B. The skills goals special to the program*** 3- The course promotes the development of sound scientific research skills, encouraging constructive scientific discussions and the expression of informed opinions. 4- It focuses on enhancing students' usage and development skills, enabling them to apply theoretical knowledge and practical scientific experience gained during their studies. 5- The course fosters critical thinking skills, empowering students to comprehend and solve scientific problems that are related to the laws of chemistry. 6- It emphasizes the acquisition of skills and the ability to apply theoretical and practical scientific knowledge in real-life situations, considering industrial and commercial constraints.
Indicative Contents المحتويات الارشادية	Analytical chemistry, as a sub-discipline, encompasses the study of material identification and assay, specifically focusing on the analysis of its components. In this course, students will develop a comprehensive understanding of the techniques, theories, and laboratory practices involved in quantitative chemical analysis. Emphasis will be placed on the gravimetric analysis methods employed in chemical analysis. Practical laboratory work will also be an integral part of the curriculum, allowing students to gain hands-on experience in these topics. By the end of the course, students will have acquired the necessary knowledge and skills to effectively perform and interpret quantitative chemical analyses using gravimetric analysis methods.

Learning and Teaching Strategies إستراتيجيات التعلم والتعليم	
Strategies	To effectively deliver this module, a primary strategy will be employed, focusing on fostering active student participation and enhancing critical thinking skills. This will be accomplished through a combination of classroom lectures, interactive tutorials, and engaging students in simple experiments and sampling activities that pique their interest. By adopting this approach, students will have the opportunity to deepen their understanding of the subject matter while refining their analytical and problem-solving abilities.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسيغيرالمنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب اسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي المنتظم للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number (Hour)	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	1, 2, 5, 6
	Assignments	2	10% (10)	2 and 12	3, 4, 5, 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	1, 2, 6
Summative assessment	**Midterm Exam**	2	10% (10)	10	1, 6
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Gravimetric Methods (Precipitation, Volatilization and Electrogravimetry), Properties of Precipitates and Precipitating Reagents.
Week 2	Steps of Gravimetric Analysis, Particle Size and Filterability of Precipitates, Factors that Determine the Particle Size of Precipitates, and Colloidal and Crystal Suspensions.
Week 3	Mechanism of Precipitate Formation (Nucleation and Particle growth), Colloidal Precipitates, Coagulation of Colloids, Factors Which Determine the Nature of the Adsorbed Counter Ion.
Week 4	Coagulation, Peptization of Colloids, Crystalline Precipitates, Methods of Improving Particle Size and Filterability, Post-precipitation, Re-precipitation, Occlusion and Co-precipitation.
Week 5	Precipitation from Homogeneous Solution, Digestion of the Precipitate, Washing the Precipitate, Drying and Ignition, Advantages and Disadvantages of the Gravimetric Methods and Applications of Gravimetric Methods.
Week 6	Inorganic Precipitating Agents, Reducing Agents, Organic Precipitating Agents, Principles and Calculations of Gravimetric Factor and Solubility Product.
Week 7	Gravimetric Factor Concept, Solubility product, and Factor Affecting on Ksp and Calculations.
Week 8	**Mid Term Exam**
Week 9	Principles of Thermogravimetry, Thermogravimetry Analysis, Differential Thermal Analysis, Differential Scanning Calorimetry, Advantages and Disadvantages of Thermal Analysis, Derivative Thermogravimetrv, Curve, Uses of TGA in Analytical Chemistry, TGA Thermogram for Some Compounds in an Inert Atmosphere, Factors Affecting the Shape of Thermogravimetric Curves.
Week 10	Differential Thermal Analysis, Formalized DTA Curve, or Heat Flux Instrumentation, Applications of DTA, Transitions through DTA Analysis of an Organic Polymer, Factors Affecting the Shape of DTA Curves, and Microthermal Analysis.
Week 11	Statistical Analysis, Errors in Analytical Measurements, Measurement Errors, Absolute and Relative Errors, Determinate Error, Indeterminate Errors, Accumulated Error.
Week 12	Assessment of Accuracy and Precision, Accuracy Precision, Standard Deviation, Relative Standard Deviation, Variance, Overall Precision, and Confidence Interval.
Week 13	Significance Testing, Significance Tests Outliers, Q-test, F-test, t-test, and Analysis of Variance.
Week 14	Calibration and Linear Regression, Calibration, Correlation coefficient, Linear Regression, Limit of Detection, Standard Addition, Internal Standardization, Internal Normalization
Week 15	2nd **Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Laboratory Instructions, Introducing Students to the Tools and Equipment used in Gravimetric Analysis, Teach Students How to Use the Accurate Analytical Balance
Week 2	Determination of Water of Crystallization in $CuSO_4.xH_2O$ Using Volatilization Method
Week 3	Determination of Nickel as Dimethylglyoxime.
Week 4	Determination of Lead as $PbCrO_4$
Week 5	Determination of chloride as AgCl

Week 6	Determination of Sulfate as $BaSO_4$
Week 7	Gravimetric Determination of Sulfate in Tap Water
Week 8	Determination of Iron as Ferric Oxide (Fe_2O_3)
Week 9	Cation Exchange Column Preparation and Determination of Total Capacity By Used NaCl
Week 10	Determination of Percentage From Sulfate Ion By Used Cation Exchange Chromatography
Week 11	Determination of Chloride By Anion Exchange Chromatography
Week 12	Separation of a Mixture of Halides By Paper Chromatography
Week 13	Separation of a Mixture of Colored Dyes By TLC
Week 14	Separation of Black Ink Components By Paper Chromatography
Week 15	Anion Exchange Column Preparation and Determination of Total Capacity By Used NaCl

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Fundamentals of Analytical Chemistry, Skoog and West, Holler and Crouch, 8th Ed., 2004. • Fundamentals of Analytical Chemistry, Douglas A. Skoog, 9th Ed.	Yes
Recommended Texts	• Fundamentals of Analytical Chemistry, Skoog and West, 7th Ed., 2000. • Principles of Instrumental Analysis, Skoog and West, Holler and Crouch, 8th Ed., 2004. • Practical Statistics for the Analytical Scientist, A Bench Guide, 2nd Ed. • Analytical Chemistry • Theoretical and Metrological Fundamentals • INSTANT NOTES of Analytical Chemistry (D. Kealey)	
Websites	**https://byjus.com/chemistry/gravimetric-analysis/** **https://link.springer.com/chapter/10.1007/978-981-15-1547-7_16** https://www.youtube.com/watch?v=peMyqdJ57dA	

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 with decimal places above or below 0.5 will be rounded to the higher or lower full mark accordingly. For instance, a mark of 54.5 will be rounded up to 55, while a mark of 54.4 will be rounded down to 54. The University strictly adheres to a policy that does not allow for "near-pass fails," and therefore, the only adjustment made to the marks awarded by the original marker(s) will be the automatic rounding as described above.

Ministry of Higher Education and Scientific Research - Iraq
University of Baghdad
College of Science
Department of Chemistry

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Inorganic Chemistry III			**Module Delivery**	
Module Type	Core			☒Theory ☐Seminar ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	CHE 23115				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader	Asmaa Mohammed Noori Khaleel Rasha Khedr Hussain Al-Daffaay		**e-mail**	Asmaa.m@sc.uobaghdad.edu.iq Rasha.khedr@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Assistant Professor Lecturer		**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 ApprovalDate	07/06/2023		**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Inorganic Chemistry II (CHE 1218)	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and IndicativeContents اهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Objectives Module **اهداف المادة الدراسية**	1. Raise a generation with knowledge of general chemistry and inorganic chemistry in particular in all fields, weather scientific or practical, given the importance of this science in all aspects of life. They are responsible for study the development needs of the country and are able to meet the requirements of the labor market in both public institutions and industrial sector 2. Spreading awareness and knowledge in the fields of chemistry sciences by providing the country with researchers and professors, who are able to deal with recent changes and developments in science and technology to keep pace with the development of the times and contribute to the development of science and technology. As well as knowledge and understanding in the use of laboratory equipment and how to prepare novel compounds and identification with different analysis method, which have been importance in the various pharmaceutical or industrial fields 3. Contribute meaning fully to strengthening the university's relationship with the community by providing consultations, as well as training and developing the teaching and administrative staff 4. Encourage outstanding students in the chemistry department to work as assistance in the department, and enable them to become part of teaching staff in the future.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***A. Cognitive goals*** 1. Bawling the theoretical foundation for the students of the second stage in the lesson of inorganic chemistry to expand their studies in the later stages 2. Enable the student to obtain knowledge and understanding of the chemistry Sciences 3. Enable the student to obtain knowledge and understanding of the chemistry law 4. Enable the student to obtain knowledge and understanding of the correct ways of using the devices to synthesis and identification different chemical compounds 5. Enable the student to obtain knowledge and understanding to pace with global development in all scientific fields as well as understanding of international chemical standards. 6. Enable the student to obtain knowledge and understanding of intellectual frame work and systems of chemistry. ***B. Skills goals specific to the program*** 1. Scientific and practical skills. 2. Skills of analysis and cultivate the skills with competence to apply theoretical and practical scientific knowledge gained from studies to real life situation, while considering industrial and commercial constraints. 3. Enabling students to solve problem related to the intellectual framework and international standards of chemistry, taking into account the laws of control and quality.
Indicative Contents المحتويات الارشادية	In this semester, focus is on studying the periodic properties, Oxidation states and oxides of representative and transition metal elements. Study of colors and spectra of transition metal complexes, factor affecting, magnetism. Electrode potential, Latimer diagram of reduction potentials. Symmetry principles. Solid state: unit cells, Miller and Weiss indices, X-ray diffraction and Bragg's low.

Learning and Teaching Strategies ستراتيجيات التعلم والتعليم	
Strategies	1. Providing students with the basics and additional topics related to previous education outcomes of skills to solve scientific problems 2. Solve a set of examples by the academic staff 3. Asking the students during the lecture to solve some scientific questions

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل 15 اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number (Hour)	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2	10% (10)	7	
	Final Exam	3	10% (10)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	periodic properties
Week 2	Uniqueness properties of first and second periods
Week 3	Comparison between f-block and d-block elements, Lanthanoid contraction
Week 4	oxidation state and oxidation no. of representative elements
Week 5	Oxidation state of d-block and f-block. Oxides of representative and transition metal elements
Week 6	Color and spectra of transition metal complexes, factors affecting on absorption energy
Week 7	**Mid Term Exam**
Week 8	magnetism
Week 9	Electrode potential
Week 10	Latimer diagram
Week 11	Principles of molecular symmetry
Week 12	Symmetry elements
Week 13	Symmetry operations
Week 14	Chemistry of solid state
Week 15	X-ray diffraction and Bragg's law

	Learning and TeachingResources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	1. Basic Inorganic chemistry by F.A.Cotton &G.Wilkinson 2. Inorganic chemistry by G.E.Huheey	Yes
Recommended Texts		
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 markof 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 automaticrounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ORGANIC CHEMISTRY I			**Module Delivery**	
Module Type	CORE			☒Theory ☐Seminar ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	CHE 23016				
ECTS Credits	7				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dr. Rafid Saad Dawood		**e-mail**	rafid.s@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	None
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This module aims to provide a good foundation for students in organic chemistry. It teaches fundamental chemical ideas in the framework of organic chemistry and begins to build the more specialized understanding of organic processes needed for the following modules. The latter will be expanded further in the Organic Chemistry 2 curriculum. This module will include main points: 1. Basic principles of organic chemistry for predicting the atom and electronic structure of molecules, their stability, reactivity, and molecular characteristics, including bond types and hybridization. 2. Being able to sketch the mechanism for a specific reaction or provide the chemicals needed for an organic reaction, as well as having a general understanding of the principles and mechanics underpinning organic reactions. 3. Know the organic compound names and categorization. 4. Through lectures, workshops, tutorials, and seminars, the students will learn more about organic chemistry and understand it better. This course will give them the confidence to talk about the path of simple processes using the language of organic chemistry.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	According to the delivery plan (weekly syllabus), the students who successfully complete the organic chemistry 1 module will be able to: 1. Predict and explain the expected chemical and physical behavior of an organic compound based on its functional groups and geometry. Identify the electronic configuration of elements atomic and molecular orbitals, especially carbon atoms. Study the types of bonds between elements and the hybridization types of atoms. Recognize the intramolecular and intermolecular forces, bond dissociation energy, polarities of bonds and molecules, and some information about the isomerism, solubility, melting, and boiling points of molecules (Lecture 1). 2. Recognize the hydrocarbons generally, and then study methane (the simplest member of the hydrocarbons) in detail. This study will focus on how to identify the structure of methane, its physical properties, sources, reactions (oxidation and halogenation), relative reactivity, chain reactions, inhibitors, heat of reaction, energy of activation, progress of reaction, rate of reaction, relative rates of reaction, transition state, empirical, and molecular formulas (Lecture 2). 3. Describe the alkanes in terms of their structure, conformation types (eclipsed, staggered, and gauche), physical properties, industrial sources, homologous series, and nomenclatures (Common and IUPAC) (Lecture 3). 4. Recognize the preparation and reaction methods and discuss the reaction mechanisms of alkanes. Learn how to analyze alkanes (Lecture 4). 5. Describe the alkenes in terms of their structure, hybridization and orbital sizes, geometric isomer types (*Cis* and *Trans or* configurational isomers), homologous series, physical properties, industrial sources, and nomenclatures (Common and IUPAC) (Lecture 5). 6. Recognize the preparation and reaction methods and discuss the reaction mechanisms of alkenes (addition, substitution, and cleavage reactions). Information about the carbonium ion in terms of its structure, stability, hyperconjugation, rearrangement, and reactions (Lectures 6 and 7) 7. List the main reactions of alkenes and identify the orientation and reactivity of specific reactions. Lean the heat of hydrogenation and stability of alkenes, resonance theory, resonance structure of the allyl radical, stability of the allyl

	radical, orbital picture, and hyperconjugation of the allyl radical. Know how to analyze the alkenes (Lectures 9 and 10). 8. Describe the alkynes in terms of their structure, hybridization and orbital sizes, homologous series, physical properties, industrial sources, and nomenclatures (Common and IUPAC) (Lecture 11). 9. Recognize the preparation methods and reactions of alkynes (addition, substitution, and oxidation reactions). Know how to analyze the alkynes (Lecture 12). 10. Describe the dienes in terms of their structure, types (conjugated, isolated, and cumulated), nomenclatures, stability and resonance, preparation, reactions (1,2-addition and 1,4-addition), orientation, and reactivity. Know how to analyze the dienes (Lecture 13). 11. Identify the alicyclic hydrocarbons in terms of their structure, classification (cycloalkane, cycloalkene, and cycloalkyne), nomenclatures, conformation, preparation, and reactions (Lecture 14).
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Structural isomers and orbital views of bonding; Structure of alkanes; Physical and chemical properties of alkanes, alkenes, and alkynes. 2. Terminology, essential ideas, and some basics of organic chemistry. 3. Basic reactions of alkanes, alkenes, alkynes, dienes, and alicyclic compounds. 4. Naming and classification of organic compounds.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	This module will be covered by class hours, tutorial hours, online work, practical hours, reports, seminars, homework, independent self-study, and guided reading.

Student Workload (SWL)
الحمل الدراسي للطالب

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 غير المنتظم للطالب خلال الفصل	112	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	3, 4, 9, 10
	Assignments	2	10% (10)	2, 12	3, 4, 5, 6
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	5, 8, 10
Summative assessment	**Midterm Exam**	2	10% (10)	7	1-7
	Final Exam	2	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week No.	Material Covered
Week 1	Introduction to Organic Chemistry - structure and properties
Week 2	Methane - Structure, sources, and reactions
Week 3	Alkanes - Structure, conformation, nomenclature
Week 4	Alkanes - Preparation and reactions
Week 5	Alkenes - Structure, hybridization, geometric isomers, and nomenclature
Week 6	Alkenes - Preparation and mechanism 1
Week 7	Alkenes - Preparation and mechanism 2
Week 8	Mid-term exam
Week 9	Alkenes - Reactions of alkene 1
Week 10	Alkenes - Reactions of alkene 2
Week 11	Alkynes - Structure, hybridization, and nomenclature
Week 12	Alkynes - Preparation and reactions
Week 13	Dienes - Structure, nomenclature, preparation, and reactions
Week 14	Alicyclic hydrocarbons - Structure, nomenclature, preparation, and reactions
Week 15	Preparatory week
Week 16	Final exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Organic Chemistry, Morrison and Boyd book, 6th edition	Yes
Recommended Texts	Organic Chemistry, Jonathan Clayden, Nick Greeves, and Stuart Warren, 2nd edition	No
Websites		

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Thermodynamic			**Module Delivery**	
Module Type	Core			☒Theory ☐Seminar ☒Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	CHE 23017				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dunya Edan Al-Mammar		**e-mail**	donia.e@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee ApprovalDate	07/06/2023		**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Objectives **اهداف المادة الدراسية**	1 Teaching students the fundamental principles of chemistry. 2 Preparing specialists in the field of physical chemistry and its practical applications, who are responsible for studying the country's developmental needs and capable of meeting the demands of the job market in both public institutions and industry sectors. 3 Cultivating an educated generation equipped with scientific knowledge, which serves as a solid foundation for bringing about significant changes and applying scientific methods in critical thinking, analysis, and adaptation to technological advancements, thereby keeping pace with the expanding human needs. 4 Making a meaningful contribution to strengthening the university's connection with society through the provision of advisory counseling, training, and the development of both teaching and administrative staff. 5 Serving the purpose of preparing chemistry graduates who specialize in contributing to the country's development. 6 Fulfilling the demands of various sectors by providing highly qualified professionals in the field of physical chemistry. 7 Encouraging those who excel in this field to work as teaching assistants in the department, enabling them to become part of the academic teaching staff in the future.
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	***C. Cognitive goals*** 1. Enable students to acquire knowledge and comprehension of the fundamental principles of physical chemistry. 2. Develop students' ability to comprehend chemical phenomena from a mathematical perspective. 3. Equip students with the skills to understand and grasp the fundamental concepts of physical chemistry through the utilization of modern software and staying updated with scientific advancements. 4. Foster students' capability to acquire knowledge, comprehends the scientific laws of physical chemistry, apply logical and scientific analysis, and interpret chemical phenomena in practical applications. ***D. Skills goals specific to the program*** 1. Foster proficient scientific research skills, encourage constructive scientific discussions, and enhance the ability to articulate opinions effectively. 2. Develop proficiency in the utilization and development of relevant skills within the field. 3. Enhance critical thinking skills and enable students to comprehend and solve scientific problems pertaining to the laws of physical chemistry. 4. Cultivate the skills and competence to apply theoretical and practical scientific knowledge gained from studies to real-life situations, while considering industrial and commercial constraints.
Indicative Contents المحتويات الارشادية	This course will provide an introduction to equilibrium thermodynamics, focusing on its application to both ideal and nonideal systems. It will cover essential concepts such as work, heat, the conversion of heat to work, and the laws of thermodynamics, including the zeroth, first, second, and third laws. Additionally, topics such as internal energy, enthalpy, Gibbs free energy, and entropy changes in specific processes will be discussed. The course will also explore Maxwell's equations, the fundamental equation for open systems, the chemical potential for pure systems, partial molar quantities, and thermodynamic properties for mixtures of ideal gases.

Learning and Teaching Strategies إستراتيجيات التعلم والتعليم	
Strategies	The main strategy to be adopted in delivering this module is to encourage students' participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by incorporating types of simple experiments that involve interesting sampling activities for the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي الغير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي الغير المنتظم للطالب اسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Units of measurements + The gas laws and properties of gases.
Week 2	Mixture of gases, Real gases, Zeroth law of thermodynamics.
Week 3	The basic concepts in thermodynamics, Systems, the first law in thermodynamics
Week 4	Types of processes, work
Week 5	Heat transaction, Internal energy, Enthalpy.
Week 6	Heat capacity, relation between heat capacity and temperature.
Week 7	Joul and Joul-Thomson experiments, adiabatic processes.
Week 8	**Mid Term Exam**
Week 9	Thermochemistry + dependence of enthalpy on temperature, various types of enthalpy.
Week 10	Second law of thermodynamics and entropy
Week 11	Entropy changes for specific process.
Week 12	Heat engines and third law of thermodynamic.
Week 13	Gibbs Free energy + fundamental equation for a closed systems.
Week 14	Maxwell relations, dependence of Gibbs free energy on temperature.
Week 15	Fundamental equation for an open systems + chemical potential, partial molar quantities. Thermodynamic quantities for a mixture of ideal gases.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	The first week serves as an introduction to the physical chemistry lab. During this week, we will cover various aspects, including the lab's instruments, the lab's system, and all the instructions that need to be followed throughout the course, especially those related to safety. We will provide students with a general overview of all the experiments they will perform during the course, along with the relevant mathematical equations and calculations. Additionally, students will be grouped together in teams of 2-4 individuals to work collaboratively.
Week 2	Experiment No.1 Part A: Density/Determination of relative and absolute densities of a liquid or a solution Part B: Viscosity/Determination of relative and absolute viscosities for a liquid and the variation with temperature.
Week 3	Experiment No.2 Heat of solution/ Determination of heat of solution from solubility measurements.
Week 4	Experiment No.3 Part A: Molecular weight determination/ Freezing points, cooling curves and cryoscopic determination of molecular weight Part B: Density of gases and vapours/ Molecular weight determination by Victor Meyer method.
Week 5	Experiment No.4 Elevation of the boiling point/ Determination of the molecular weight by elevation of the boiling point.
Week 6	Experiment No.5 Part A: Refractometry/ Determination of refractive index of some alcohols. Part B: Molecular refractivity/ Determination of molecular refractivity of solutions.
Week 7	Experiment No.6 Part A: Thermochemistry/ Determination of calorimetric constant. Part B: Heat of neutralization/ Determination of heat of neutralization of a strong acid with a strong base. Part C: Heat of solution/ Determination of the heat of a solution.

Week 8	Experiment No.7 Equilibrium Constant/ Determination the formula of a complex formed between Copper (II) ion and Ammonia.
Week 9	Experiment No.8 Properties of dilute solutions/ Distribution of a solute between immiscible solvents.
Week 10	Experiment No.9 Relative molecular mass/ Determine the relative molecular mass of a polymer from viscosity measurements.
Week 11	Experiment No.10 Three components liquid system/ The Triple system.
Week 12	Experiment No.11 Adsorption from solution.
Week 13	Revision for all Experiment to prepare for the final exam+ Repetition for some experiments which some student have missed throughout the course.
Week 14	Final practical exam for the 1st half of the students.
Week 15	Final practical exam for the 2nd half of the students.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thermodynamics and its application in chemistry(Saleh J.M.)	Yes
Recommended Texts	Physical chemistry Alberty and Silbey	
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	(قيد المعالجة)راسب	(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 markof 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	COMPUTER II			**Module Delivery**	
Module Type	BASIC			☒ Theory ☐ Seminar ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	UOB 207				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer I (UOB 103)	**Semester**	2
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Learn programming for non-CS students a programming language that is as suitable as the purpose for which it is being used in the department, like Python, R, or Matlab. 2. Learn basic syntax and logic of things like variables, data types, input/output, if-else statements, loops, functions, and data visualization.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be: 1. Learn the basics of a program code as a collection of one or more standard functions, syntax rules, semantic rules, symbols, special words, and comments. 2. Learn what a stream is and examine input and output streams. 3. Learn mathematical operators and expressions. 4. Learn how to form and evaluate logical (Boolean) expressions. 5. Learn how to use the selection control structures: if, if... else, nested if, and nested if…else. 6. Learn how to construct and use looping structures. 7. Learn to program any loop. 8. Learn how to form and use single, multiple disjoint, and nested loop structures. 9. Learn how to exploit built-in functions. 10. Learn how to visualize data with different plot structures.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises and daily quizzes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	3, 4, 9, 10
	Assignments	2	10% (10)	2, 12	3, 4, 5, 6
	Projects / Lab.	1	10% (10)	Continuous	

	Report	1	10% (10)	13	5, 8, 10
Summative assessment	**Midterm Exam**	2	10% (10)	7	1-7
	Final Exam	2	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week No.	Main rules for problem-solving techniques.
Week 1	Output statements.
Week 2	Input statements.
Week 3	Assignment operator, declaration, and assignment statements.
Week 4	Mathematical operators and expressions.
Week 5	If statements and nested if statements.
Week 6	if…else statements.
Week 7	Midterm Exam.
Week 8	Loop and body of loop.
Week 9	Nested loops.
Week 10	Arrays.
Week 11	Arrays: continue.
Week 12	Data Visualization 1: Visualizing data with several types of visualizations, for example:
Week 13	Scatter plots
Week 14	Data Visualization 2: continue.
Week 15	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Be familiar with the Editor and run window.
Week 2	Lab 2: output statements.
Week 3	Lab 3: Input statements.
Week 4	Lab 4: Assignment statement
Week 5	Lab 5: Playing with mathematical operators and expressions.
Week 6	Lab 6: if statement and nested if statements.
Week 7	Lab 7: if…else statement.
Week 8	Midterm Exam.
Week 9	Lab 8: loop.
Week 10	Lab. 9: nested loops.
Week 11	Lab 10: 1D arrays and 2D arrays.

Week 12	Lab. 11: 1D arrays and 2D arrays: continue.
Week 13	Lab 12: Data visualization.
Week 14	Lab. 13: Data visualization: continue.
Week 15	**Preparatory week before the final Exam.**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	THE CRIMES OF THE BAATH REGIME IN IRAQ			**Module Delivery**	
Module Type	BASIC			☒ Theory ☐ Seminar ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	UOB 208				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dr. Mohanad Ahmed Yaseen		**e-mail**	mohannad.ahmed@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	Dr Farah Diea Hussain		**e-mail**	E-mail Farah@copolicy.uobaghdad	
Review Committee Approval	07/06/2023		**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 Aims أهداف المادة الدراسية	1. ان الأجيال الحالية لم تعيش فترة الدكتاتورية والكثير منهم لايعرف معاناة الشعب والجرائم التي ارتكبها النظام المقبور. 2. بيان مدى سوء حكم النظام الشمولي والذي لم يقتصر فقط على داخل العراق بل على دول المجاور له. 3. توعية الطلبة على الأضرار الكبيرة التي احدثها النظام البائد والجرائم التي ارتكبها بحق الشعب العراقي. 4. أظهار الاضرار الاقتصادية والاجتماعية والتنموية التي أحدثها النظام السابق. 5. بيان مدى وحشية النظام البائد والإعدامات الجماعية. 6. بيان الاساليب القمعية التي مارسها النظام البائد والتهجير القصري . 7. كبح الحريات العامة وتدهور مستوى الاعلام و الثقافة. 8. توضيح الأضرار البيئية والزراعية التي ظهرت آثارها في السنوات السابقة والحالي. 9. بيان مدى سوء حكم النظام الشمولي والذي لم يقتصر فقط على داخل العراق بل على دول المجاورة ايضا. 10. ان الهدف من تدريس هذه المادة لمعرفة تاريخ تلك الحقبة السوداء 11. الهدف من هذه المادة ان الحكم في العراق لن يدوم باستخدام أدوات العنف والقوة مهما كانت مفرطة .والعراق يجب ان يحكم بنظام سياسي يحترم العراقيين ومعتقدات ودياناتهم وقومياتهم وان يؤمن بالتعدد في المجتمع العراقي
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. التعرف على الجرائم النظام البائد في كبح الحريات العامة. 2. دراسة الانظمة السياسية في العراق نبذة تاريخية. 3. معرفة ابرز انتهاكات النظام البعثي للحقوق والحريات. 4. معرفة اثر سلوكيات النظام البعثي المقبور على المجتمع العراقي 5. التوضيح للاجيال الحالية حقيقة حقبة تاريخية سوداء في تأريخ العراق المعاصر التي شهدت الظلم والاستبداد. 6. الاطلاع على وحشية واستبداد وقمع النظام البائد للشعب العراقي. 7. معرفة ان الظلم والاستبداد والحكم الدكتاتوري لن يدوم مهما كانت قسوته. 8. تعليم الطلبة وارشادهم على النظام السياسي الصحيح لحكم هذا الشعب الطيب. والذي يجب ان يبتعد عن الدكتاتورية والظلم وان يكون مبنى على العدالة واحترام التعددية الدينية والمذهبية والقومية . 9. توعية الطلبة الى حجم الدمار والتلوث البيئي الذي احدثته الحروب واستخدام اسلحة محرمة دوليا. 10. بيان مدى قسوة النظام البعثي وقمعه للشعب والمقابر الجماعية التي ضمت رفاة آلاف الشهداء الأبرياء. 11. توعية الطلبة الى ماقام به النظام السابق من تهجير ابناء هذا البلد وكفائته العلمية والادبية .

Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الإرشادي ما يلي: مقدمة في البداية تتضمن نبذة تاريخية عن النظام السياسي في العراق من قبل بريطانيا وصولاً الوصول حزب البعث المقبور الى السلطة وكذلك دراسة جرايم حزب البعث منذ توليه السلطة والعبث بها كذلك توضيح ما اصاب العراق من اثار وكوارث على يد هذا النظام الدكتاتوري المجرم الذي جسد اقسى انواع التعسف والظلم والطغيان والاستبداد كذلك ارشاد الطلبة الى ان الظلم والاستبداد يدمر الشعوب ويجر الويلات عليها وبيان الاثار التي حدثت نتيجة الحروب العبثية التي خلفت ورائها تدمير في كل مفاصل البلاد فدمرت البنى التحتية والتربة والمياه والسماء والاشجار وكل شئ في هذه البلاد والتي كانت من افضل بلدان الشرق الاوسط .كذلك تم تدمير حتى البيئة المائية من خلال تسريب النفط في حرب الكويت والخسائر الاقتصادية الهائلة وتضرر الابار النفطية والبنى التحتية والصناعة وفرض حصار دمر البيئة الاجتماعية والاقتصادية التي لازلنا الى يومنا هذا نرفع اثار النظام البائد على الصعيد الدولي والداخلي.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	الإستراتيجية المهمة التي تم تبنيها في هذه الوحدة هي توعية الطلبة وعملية تنمية مداركهم العقلية على فهم النظام السياسي العراقي البائد ومعرفة الجرائم التي ارتكبها النظام البائد وعمليه تحفيز الطلبة على التامل والتفكير في التحليل هذه الجرائم وانعكاساتها والعمل على محاربة الظلم ولاستبداد ورفض اي شكل من اشكال الدكتاتورية كذلك استخدام البرامج التفاعلية والتعليمية في استخدام الادوات التحليلية والنقدية وتشجيع الطلبة على البحث والحوار والنقاش على اسس معرفية تستند الى عمليات البحث العلمي والتدقيق والقراءة العميقة والفهم الجيد والرصانة العلمية وكذلك استخدام الوسائل العلمية والاساليب التفاعلية سواء كانت المسموعة والمرئية واعطاء الادلة المادية الواضحة على وحشية النظام السابق لكي يطلع الطلبة وتصبح لديهم قناعة علمية راسخة على هذة الحقبة السوداء والجرائم التي لم تشهد لها البشرية مثال .كذلك تنمية القدرة الذهنية والفكرية لدى الطلبة على معرفة الأنظمة الصالحة. كذلك تفعيل الدور الأخلاقي وزرع الأخلاق والقيم والمبادئ الحميدة لدى الطلبة.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number (Hour)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	1, 2, 10, 11
	Assignments	8	10% (10)	2, 12	3, 4, 6, 7
	Projects / Lab.		10% (10)	Continuous	All
	Report	1	10% (10)	13	5, 8, 10

Summative assessment	**Midterm Exam**	1	10% (10)	7	1-7
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week No.	مقدمة عن انتهاكات الحقوق والحريات
Week 1	نبذة وصفية عن الانظمة السياسية في العراق
Week 2	انتهاكات النظام البعثي للحقوق والحريات العامة
Week 3	اثر سلوكيات النظام البعثي في المجتمع وتسلطه على الدولة
Week 4	اثر المرحلة الانتقالية في محاربة السياسة الاستبدادية
Week 5	الميدان النفسي والاجتماعي
Week 6	الدين والدولة
Week 7	مقدمة عن انتهاكات الحقوق والحريات
Week 8	Mid Exam
Week 9	عسكرة المجتمع والثقافة والاعلام
Week 10	اثر القمع والحروب على البيئة والسكان
Week 11	التلوث البيئي واستعمال الاسلحة المحرمة دوليا
Week 12	سياسة الارض المحروقة وتجفيف الاهوار
Week 13	المقابر الجماعية وتدمير البيئة الزراعية
Week 14	Mid Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	منهاج جرائم حزب البعث البائد 2023/جمهورية العراق/وزارة التعليم العالي والبحث العلمي/دائرة الدراسات والتخطيط	
Recommended Texts		
Websites		

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.

Level Two
(**UGII**)
Semester-Four

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Separation Techniques			**Module Delivery**	
Module Type	Core			☒Theory ☐Seminar ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	CHE 24120				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dr. Ashraf Saad Rasheed. Dr. Jalal Nasser Jeber		**e-mail**	ashraf.s@sc.uobaghdad.edu.iq jalal.n@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Assistant professor		**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 ApprovalDate	07/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Gravimetric Analytical Chemistry (CHE 23114)	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Objectives اهداف المادة الدراسية	1. Imparting the fundamental principles of chemistry to students. 2. Equipping students with specialized knowledge in general chemistry and its practical applications, enabling them to contribute to the country's development and meet the demands of the job market in public institutions and industry sectors. 3. Cultivating an educated generation that values science and utilizes it as a strong foundation to drive significant changes, employing scientific knowledge and analytical methods in critical thinking, problem-solving, and adaptation to technological advancements and evolving human needs. 4. Actively fostering and documenting the university's engagement with society through the implementation of advisory counseling, training programs, and the professional development of faculty and administrative staff. 5. Providing graduates with specialized expertise in chemistry who can actively contribute to the nation's progress and development. 6. Meeting the diverse needs of various sectors by supplying highly qualified professionals in the field of chemistry. 7. Encouraging outstanding individuals in the field to serve as teaching assistants within the department, fostering their growth and potential as future members of the academic teaching staff
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***E. Cognitive goals*** 1. The main objective of this course is to familiarize students with the fundamental principles of separation processes used in analytical chemistry. 2. Students will gain an in-depth understanding of techniques such as extraction, gas and liquid chromatography, and size and ion chromatography. 3. The course aims to develop students' independent laboratory skills in performing these separation techniques and interpreting data from analytical separation methods. 4. Students will explore classical separation methods and gain insights into the advancements made in separation techniques. 5. Students will learn the theory and applications of liquid-liquid, liquid-solid, solid-phase micro extractions, and stir-bar sorptive extraction techniques. 6. Students will explore chromatography principles, including column efficiency, band broadening, resolution, and theoretical plates. 7. Students will also learn about quantitative analysis and applications in HPLC. 8. Throughout the course, students will engage in practical laboratory work to develop their skills in performing separation techniques. They will learn how to analyze and interpret data obtained from these techniques. 9. By the end of the course, students will have a comprehensive understanding of separation processes and the ability to apply their knowledge in solving analytical problems and interpreting experimental results effectively. They will be equipped with the necessary skills to conduct independent research and work in analytical chemistry laboratories ***F. The skills goals special to the program*** 1- Developing proficient scientific research skills and fostering constructive scientific discussions that encourage the expression of opinions. 2- Enhancing usage and development skills related to analytical techniques and instruments.

	3- Cultivating critical thinking skills and enabling students to comprehend and solve scientific problems specifically associated with Separation Methods. 4- Equipping students with the necessary skills and competence to apply theoretical and practical scientific knowledge gained from their studies in the field of Separation Methods.
Indicative Contents المحتويات الارشادية	Analytical chemistry, as a sub-discipline, encompasses the study of material identification and assay, specifically focusing on the analysis of its components. In this course, students will develop a comprehensive understanding of the techniques, theories, and laboratory practices involved in quantitative chemical analysis. Emphasis will be placed on the various separation methods employed in chemical analysis, such as chromatography (including the theoretical principles, ion-exchange chromatography, paper and thin-layer chromatography, solvent extraction, etc.). Practical laboratory work will also be an integral part of the curriculum, allowing students to gain hands-on experience in these topics. By the end of the course, students will have acquired the necessary knowledge and skills to effectively perform and interpret quantitative chemical analyses using separation methods.

Learning and Teaching Strategies إستراتيجيات التعلم والتعليم	
Strategies	The primary approach employed in delivering this module is to foster active student participation in exercises, aiming to enhance their critical thinking abilities. This will be accomplished through a combination of classroom lectures, interactive tutorials, and engaging in hands-on experiments that involve intriguing sampling activities for the students. By encouraging their active involvement, we aim to refine and expand their critical thinking skills, enabling them to analyze and interpret data effectively. This interactive and practical approach will provide students with a deeper understanding of the subject matter and promote their overall learning experience.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	1, 2, 8, 9
	Assignments	2	10% (10)	2 and 12	3, 4, 6, 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	5, 8, 9
Summative assessment	Midterm Exam	2	10% (10)	10	1-9
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Separation Methods, Introduction to chromatography, What is meant by Chromatography, Classification of Chromatographic Methods,
Week 2	Adsorption Chromatography, Partition Chromatography, Ion-exchange Chromatography and Molecular Exclusion Chromatography
Week 3	The Chromatographic Process, Physical principles of chromatographic separation and Retention parameters
Week 4	Retention factor, selectivity, and resolution and How to calculate H and N from a chromatogram
Week 5	Theoretical concepts of the chromatography, The plate theory and The dynamic theory (van Deemter equation)
Week 6	Continued: The dynamic theory (van Deemter equation)
Week 7	Solved Problems, Five examples, Column Chromatography, Principles, Separation, Normal phase and RP-phase, What Do You Understand By Isocratic And Gradient Elution?
Week 8	Paper and Thin-layer Chromatography, Paper Chromatography, Principles, Qualitative PC, Solvent systems for PC applications, What Are The Limitations Of Paper Chromatography Technique
Week 9	Thin-Layer Chromatography (TLC), Principles, Qualitative TLC, Efficiency and Resolution in Thin Layer Chromatography, Factors that influence separation and rate of elution Advantages of TLC.
Week 10	**Mid Term Exam**
Week 11	Liquid-Liquid Extraction, Distribution Coefficient, Distribution Ratio (D), Relationship between D and K_D from the involved equilibrium processes
Week 12	Percentage Extraction (%E), The factors affecting the separation efficiency, Selectivity of Extraction and Applications of Solvent Extraction
Week 13	Ion-Exchange Chromatography, What is the Ion Exchange, What are Ion-Exchangers, General Properties of Exchange Media, What main types of Ion Exchangers are? And *Cation Exchange Resins* :
Week 14	Anion Exchange Resins, Classification of Organic Ion Exchange Resins, How ion exchange resins work, Selectivity, Capacity of Ion exchanger and Applications of Ion Exchange Resins
Week 15	Capacity of Ion exchanger and Applications of Ion Exchange Resins

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Analytical mechanics (Separation Methods). 1- "Introduction to Modern Liquid Chromatography" by Lloyd R. Snyder, Joseph J. Kirkland, and John W. Dolan. 2- "Principles of Instrumental Analysis" by Douglas A. Skoog, F. James Holler, and Stanley R. Crouch. 3- "Separation Process Principles" by J. D. Seader, Ernest J. Henley, and D. Keith Roper. 4- "Chromatography: Concepts and Contrasts" by James M. Miller and Jane C. Miller. 5- "Thin-Layer Chromatography: A Modern Practical Approach" by Peter E. Wall and Colin F. Poole. 6- "Liquid Chromatography: Fundamentals and Instrumentation" by Salvatore Fanali, Paul R. Haddad, Colin F. Poole, and Peter Schoenmakers. 7- "Introduction to Chromatography" by Cazes Jack. 8- "Modern HPLC for Practicing Scientists" by Michael W. Dong. 9- "Analytical Chemistry: Principles and Techniques" by H. D. Belkebir. 10- "Chromatography: Concepts and Applications" by Purnendu K. Dasgupta and Kevin A. Schug.	Yes
Recommended Texts		
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 with decimal places above or below 0.5 will be rounded to the higher or lower full mark accordingly. For instance, a mark of 54.5 will be rounded up to 55, while a mark of 54.4 will be rounded down to 54. The University strictly adheres to a policy that does not allow for "near-pass fails," and therefore, the only adjustment made to the marks awarded by the original marker(s) will be the automatic rounding as described above.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Inorganic Chemistry IV		**Module Delivery**	
Module Type	Core		☒**Theory** ☐**Seminar** ☒**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	CHE 24121			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGII		**Semester of Delivery**	4
Administering Department	Chemistry		**College**	Science
Module Leader	Asmaa Mohammed Noori Khaleel Rasha Khedr Hussain Al-Daffaay		**e-mail**	Asmaa.m@sc.uobaghdad.edu.iq Rasha.khedr@sc.uobaghdad.edu.iq
Module Leader's Acad. Title	Assistant Professor Lecturer		**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 ApprovalDate	07/06/2023		**Version Number**	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Inorganic Chemistry IV (CHE 23115)	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and IndicativeContents
اهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Objectives **اهداف المادة الدراسية**	1. Raise a generation with knowledge of general chemistry and inorganic chemistry in particular in all fields, weather scientific or practical, given the importance of this science in all aspects of life. They are responsible for study the development needs of the country and are able to meet the requirements of the labor market in both public institutions and industrial sector 2. Spreading awareness and knowledge in the fields of chemistry sciences by providing the country with researchers and professors, who are able to deal with recent changesand developments in science and technology to keep pace with the development of the times and contribute to the development of science and technology. As well as knowledge and understanding in the use of laboratory equipment and how to preparenovel compounds and identification with different analysis method, which have been importance in the various pharmaceutical or industrial fields 3. Contribute meaning fully to strengthening the university's relationship with the community by providing consultations, as well as training and developing the teaching and administrative staff 4. Encourage outstanding students in the chemistry department to work as assistance in the department, and enable them to become part of teaching staff in the future.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***C. Cognitive goals*** 1. Bawling the theoretical foundation for the students of the second stage in the lesson of inorganic chemistry to expand their studies in the later stages 2. Enable the student to obtain knowledge and understanding of the chemistry Sciences 3. Enable the student to obtain knowledge and understanding of the chemistry law 4. Enable the student to obtain knowledge and understanding of the correct ways of using the devices to synthesis and identification different chemical compounds 5. Enable the student to obtain knowledge and understanding to pace with global development in all scientific fields as well as understanding of international chemical standards. 6. Enable the student to obtain knowledge and understanding of intellectual frame work and systems of chemistry. ***D. Skills goals specific to the program*** 1. Scientific and practical skills. 2. Skills of analysis and cultivate the skills with competence to apply theoretical and practical scientific knowledge gained from studies to real life situation, while considering industrial and commercial constraints. 3. Enabling students to solve problem related to the intellectual framework and international standards of chemistry, taking into account the laws of control and quality.
Indicative Contents المحتويات الارشادية	In this semester, focus is on studying the groups 15-18 (Nitrogen, Oxygen, halogens and noble gases (properties, reactions, compounds, structures and formal charge calculations. Acids and bases (definition of Lewis , Bronsted-Lowry and Arrhenius acids , study of strength acidity , oxoacids , classification of acids and bases and study of hard and soft acid base . Solvents, classification of solvents and effect of solvents on solute behavior.

Learning and Teaching Strategies ستراتيجيات التعلم والتعليم	
Strategies	1. Providing students with the basics and additional topics related to previous education outcomes of skills to solve scientific problems 2. Solve a set of examples by the academic staff 3. Asking the students during the lecture to solve some scientific questions

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل 15 اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number (Hour)	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2	10% (10)	7	
	Final Exam	3	10% (10)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Study of group 15 (Nitrogen) (properties , reactions)
Week 2	Study of group 15 (Nitrogen) (compounds , structures and formal charge calculations)
Week 3	Study of group 16 (Oxygen) (properties , reactions)
Week 4	Study of group 16 (Oxygen) (compounds , structures and formal charge calculations
Week 5	Study of group 17 (halogens) (properties , reactions)
Week 6	Study of group 17 (halogens) (compounds , structures and formal charge calculations
Week 7	**Mid Term Exam**
Week 8	Study of group 18 (noble gases) (properties , reactions)
Week 9	Study of group 18 (noble gases) (compounds , structures and formal charge calculations)
Week 10	Acids and bases (definition of Lewis , Bronsted-Lowry and Arrhenius acids)
Week 11	Acids and bases (study of strength acidity , oxoacids)
Week 12	Classification of acids and bases and study of hard and soft acid base
Week 13	Study of hard and soft acid base)
Week 14	Solvents and classification of solvents
Week 15	Effect of solvents on solute behavior

	Learning and TeachingResources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	1. Basic Inorganic chemistry by F.A.Cotton &G.Wilkinson 2. Inorganic chemistry by G.E.Huheey	Yes
Recommended Texts		
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 markof
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 automaticrounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ORGANIC CHEMISTRY II	**Module Delivery**	
Module Type	CORE		☒Theory ☐Seminar ☒Lab ☒Tutorial ☐Practical ☐Seminar
Module Code	CHE 24122		
ECTS Credits	6		
SWL (hr/sem)	150		

Module Level	UGII	**Semester of Delivery**	4
Administering Department	Chemistry	**College**	Science
Module Leader	Dr. Muna Ismael Khalaf	**e-mail**	Muna.i@sc.uobaghdad.edu.iq
Module Leader's Acad. Title	Asst. Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ORGANIC CHEMISTRY I (CHE 23116)	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This module aims to provide a good foundation for students in organic chemistry. It teaches fundamental chemical ideas in the framework of organic chemistry and begins to build the more specialized understanding of organic processes needed for the following modules. The latter will be expanded further in the Organic Chemistry 3 curriculum. This module will include the main points: 1. Basic principles of aromatic compounds for predicting aromaticity and electrophilic substitution reactions, their stability, reactivity, and molecular characteristics, including bond types and hybridization. 2. Being able to sketch the mechanism for a specific reaction or provide the chemicals needed for an organic reaction, as well as having a general understanding of the principles and mechanics underpinning organic reactions. 3. Know the organic compound names and categorization. 4. Through lectures, workshops, tutorials, and seminars, the students will learn more about organic chemistry and understand it better. This course will give them the confidence to talk about the path of simple processes using the language of organic chemistry.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This module will cover the following topics in organic chemistry: 1- Benzene and aromatic compounds 2- Arene compounds - Preparation and reactions 3- Alkyl halides - Preparation, reactions, and S_N1 and S_N2 mechanisms 4- Alcohols - Preparation and reactions 5- Alcohols - Preparation and reactions 6- Ethers - Preparation and reactions 7- Epoxides - Preparation and reactions
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Structure of aromatic compounds; physical and chemical properties of benzene, alkyl halides, alcohols and ether and epoxides. 2. Terminology, essential ideas, and some basics of organic chemistry. 3. Basic reactions of alkanes, alkenes, alkynes, dienes, and alicyclic compounds. 4. Naming and classification of organic compounds.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be covered by class hours, tutorial hours, online work, practical hours, reports, seminars, homework, independent self-study, and guided reading.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week No.	Material Covered
Week 1	Introduction - Benzene and aromaticity properties
Week 2	Nomenclature of benzene derivatives
Week 3	Electrophilic substitution reactions of aromatic compounds
Week 4	Classification of substituent groups in aromatic compounds
Week 5	Arenes - Nomenclature and physical properties
Week 6	Preparation and reactions of arenes
Week 7	Mid-term exam
Week 8	Alkyl halides: Classification, nomenclature and physical properties
Week 9	Industrial and laboratory preparation
Week 10	S_N1 and S_N2, E1 and E2 mechanisms, nucleophile substitution, and elimination reactions
Week 11	Alcohols (I) - Classifications, nomenclature and physical properties
Week 12	Industrial and laboratory preparations
Week 13	Alcohols (II) - Reactions and mechanism
Week 14	Ethers - Properties, preparation and reactions
Week 15	Epoxides - Properties, preparation and reactions
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week No.	Material Covered
Week 1	Lab 1: Safety guidelines in the organic chemistry laboratory
Week 2	Lab 2: Determination of the melting point for the organic compounds
Week 3	Lab 3: Determination of the boiling point for the organic compounds
Week 4	Lab 4: Purification of the solid organic compounds (recrystallization process)
Week 5	Lab 5: Purification of the liquid organic compounds (simple distillation)
Week 6	Lab 6: Purification of the liquid organic compounds (fractional distillation)
Week 7	Lab 7: Qualitative analysis of the elements (nitrogen, sulfur, and halogens)
Week 8	Lab 8: Qualitative analysis of the functional groups (carbonyl, hydroxyl, and double bond)
Week 9	Lab 9: Preparation and identification of saturated hydrocarbons (methane)
Week 10	Lab 10: Preparation and identification of unsaturated hydrocarbons (cyclohexene)
Week 11	Lab 11: Preparation and identification of alkyl halides (*n*-butyl chloride and *n*-butyl bromide)
Week 12	Lab 12: Preparation of pharmaceutical organic compounds (aspirin)
Week 13	Lab 13: Preparation of pharmaceutical organic compounds (acetanilide)
Week 14	Final exam
Week 15	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Organic Chemistry, Morrison and Boyd book, 3rd edition	Yes
Recommended Texts	Organic Chemistry, Tylor s, and Stuart Warren, 2nd edition	yes
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	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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Chemistry of Solutions			**Module Delivery**	
Module Type	Core			☒Theory ☐Seminar ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	CHE 24122				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	Chemistry		**College**	Science	
Module Leader	Alaa Abd AL Zahra		**e-mail**	alaa.a@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Lecturer		**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 ApprovalDate	07/06/2023		**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Thermodynamic (CHE23117)	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Objectives اهداف المادة الدراسية	1. Teaching students the fundamental principles of chemistry. 2. Preparing specialists in the field of physical chemistry and its practical applications, responsible for studying the country's development needs and capable of meeting the demands of the job market in both public institutions and industry sectors. 3. Cultivating an educated generation equipped with scientific knowledge as a solid foundation for driving radical changes, applying scientific methods in critical thinking, analysis, and adaptation to technological advancements, in order to keep up with expanding human needs. 4. Making a meaningful contribution to deepening and documenting the university's connection with society through the implementation of advisory counseling, training, and the development of teaching and administrative staff. 5. Providing a service of preparing chemistry graduates specialized in contributing to the country's development. 6. Meeting the needs of various sectors with highly qualified individuals in the field of physical chemistry. 7. Encouraging distinguished individuals in this field to work as teaching assistants in the department, enabling them to become part of the academic teaching staff in the future.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***G. Cognitive goals*** 1. Enable students to acquire knowledge and comprehension of the fundamental principles of physical chemistry. 2. Develop students' ability to comprehend chemical phenomena from a mathematical perspective. 3. Equip students with the skills to understand and grasp the fundamental concepts of physical chemistry through the utilization of modern software and staying updated with scientific advancements. 4. Foster students' capability to acquire knowledge, comprehends the scientific laws of physical chemistry, apply logical and scientific analysis, and interpret chemical phenomena in practical applications. ***H. The skills goals special to the program*** 1. Foster proficient scientific research skills, encourage constructive scientific discussions, and enhance the ability to articulate opinions effectively. 2. Develop proficiency in the utilization and development of relevant skills within the field. 3. Enhance critical thinking skills and enable students to comprehend and solve scientific problems pertaining to the laws of physical chemistry. 4. Cultivate the skills and competence to apply theoretical and practical scientific knowledge gained from studies to real-life situations, while considering industrial and commercial constraints.
Indicative Contents المحتويات الارشادية	The course focuses on the principles of thermodynamics and their application to the study of changes in the state of matter, including phase transitions. It aims to establish a relationship between the equilibrium constant and the properties of substances involved in chemical reactions. The course also covers the derivation of general equilibrium

	expressions and explores the impact of temperature on the equilibrium constant. Furthermore, the course examines various types of phase diagrams, considering the phase rule and phase equilibrium for systems with one, two, and three components. It delves into the investigation of ideal and nonideal solutions, encompassing completely miscible, partially miscible, and immiscible liquids. Additionally, the course addresses colligative properties of dilute solutions, thermodynamics of ideal solutions, and statistical thermodynamics.

Learning and Teaching Strategies
إستراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster student engagement and enhance their critical thinking skills. This will be accomplished through interactive classes, tutorials, and the inclusion of simple experiments that involve engaging sampling activities. The aim is to encourage active participation from students and provide opportunities for them to refine and expand their critical thinking abilities.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي الغير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي الغير المنتظم للطالب اسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقيم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Chemical Equilibrium: How to calculate equilibrium constants for homogenous reactions. Relation between K_c, K_p and K_x Characteristics of equilibrium constants. The Le Chatelier principle
Week 2	The relation between Gibbs free energy and equilibrium constant. Determination of equilibrium constant for gas reactions. This includes two types: 1. Reactions which involves no change the number of moles. 2. Reactions which involve a change in the number of moles (increase in Δn and decrease in Δn). Dissociation of gases from density measurements. Chemical equilibrium for heterogeneous reactions
Week 3	Determination of equilibrium constants in homogeneous liquid system. Chemical equilibrium for heterogeneous reactions. Calculation of chemical equilibrium by indirect method. Effect of temperature on chemical equilibrium
Week 4	Phase Equilibrium: One component system. Phase diagram for water. Clapeyron equation. Clausius – Clapeyron equation
Week 5	Two components system. Liquid-solid with (formation of eutectic mixture). Liquid-solid with (formation of compound with congruent melting point).
Week 6	Solutions/ ideal solutions. Solutions of gases in liquid (Henry`s law). Liquid-liquid mixture (completely miscible) Raoult`s law for ideal solution.
Week 7	Deviation from Raoult`s law: 1.Positive deviation. 2.Negative deviation Vapor pressure / composition diagram for: a) ideal solution. b) non-ideal solution with: 1.positive eviation 2.negative deviation.. Temperature composition diagram and boiling point composition diagram for: a) ideal solution nd b) non ideal solution with: 1.positive deviation and 2.negative deviation. Partially miscible liquids/ 1.system with upper critical solution temperature 2.system with lower critical solution temperature 3. System with upper and lower critical solution temperatures.
Week 8	Mid Term Exam
Week 9	Immiscible liquid. Three components system. Dilute solutions Collective properties:
Week 10	Immiscible liquid. Three components system. Dilute solutions Collective properties:

Week 11	Collective properties: 1.Lowering the vapor pressure 2.Elevation of boiling point 3.Depression of freezing point 4. Osmosis and osmotic pressures.
Week 12	Partial molar Gibbs free energy for two components solutions 1. ΔG_{mix} for liquid mixture (ideal solution) 2. ΔG_{mix} for two liquids vapor(ideal gas)
Week 13	Thermodynamic for ideal solution ΔH_{mix}, ΔS_{mix} and ΔG_{mix}.. Translation partition function. Rotational partition functions for diatomic molecule.
Week 14	Statistical thermodynamics Boltzman relation Partition function Q.
Week 15	Vibrational partition function Degree of freedom. Relation between partition function and thermodynamic quantities. Relation between equilibrium constant K_{eq} and partition function Q.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thermodynamics and its application in chemistry(Saleh J.M.)	Yes
Recommended Texts	Physical chemistry Alberty and Silbey	
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 markof 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	MATHEMATIC II	**Module Delivery**	
Module Type	SUPLEMENT	☒**Theory** ☐**Seminar** ☐**Lab** ☒**Tutorial** ☐**Practical**	
Module Code	CHE 24124		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGII	**Semester of Delivery**	4
Administering Department	Chemistry	**College**	Science
Module Leader	Dr. Zainab Talib	**e-mail**	zinatalib77@gmail.com
Module Leader's Acad. Title	Teacher	**Module Leader's Qualification**	Ph.D.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval	17/06/2023	**Version Number**	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MATHEMATIC (CHE 12010)	**Semester**	2
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. Helping students to rely on themselves in academic achievement in mathematics. 2. Teaching students the basic principles of mathematic 3. Develop some healthy habits, such a cooperation, construction criticism, mutual respect and accuracy.

	4. Develop scientific innovations and mental skills.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define and write the basics and concepts of mathematics 2. Building mathematical arguments and proofs and applying the unified basic structures of mathematics 3- Ability to work independently and within a team 4- Communicate and convey mathematical ideas, both orally and in writing.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A 1- To enable the student to know and understand the basics of mathematic 2- To make student able to understand the basics of mathematic 3- Enable student to obtain knowledge , understand the scientific laws of mathematic and practical applications Part B 1- Sound scientific research skills and constructive scientific discussions and expressing of opinions 2- Thinking skills and enabling the student to understands and solve scientific problems related to the laws of mathematic
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: teaching strategy are the set of activities or mechanisms used by the teacher (presentation – coordination – training – discussion in order to achieve predetermined teaching objectives . it includes two components methodology and procedure , while together form an overall plan for teaching a particular lesson , unit or course .

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition of Differential equation
Week 2	ordinary Differential equation and partial Differential equation
Week 3	First order first degree Differential equation, variables separable
Week 4	Homogenous equation, methods to solve Homogenous equation
Week 5	Non- Homogenous equation, methods to solve Homogenous equation
Week 6	Exact Differential equation, methods to solve Exact Differential equation
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Linear Differential equation, methods to solve Linear Differential equation
Week 9	Non- Linear Differential equation, methods to solve Linear Differential equation
Week 10	Second –order differential equation reducible to first order
Week 11	The type does not explicit contain the unknown functions
Week 12	The type does not explicit contain the independent variable x
Week 13	T- Laplace equations and kernel of Laplace equation
Week 14	Inverse Laplace equations and derivative of Laplace equations
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	ordinary Differential equation , Willian A.Adkins and Mark G. G.Davidson	yes
Recommended Texts	Thomas calculus , George B.thomas	yes
Websites		

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	ARABIC LANGUAGE II		**Module Delivery**	
Module Type	BASIC		☒Theory ☐Seminar ☐Lab ☐Tutorial ☐Practical	
Module Code	UOB 205			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGII	**Semester of Delivery**	4	
Administering Department	Chemistry	**College**	Science	
Module Leader		**e-mail**		
Module Leader's Acad. Title		**Module Leader's Qualification**		
Module Tutor	None	**e-mail**	None	
Peer Reviewer Name		**e-mail**		
Review Committee Approval		**Version Number**		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Arabic Language I (UOB 101)	**Semester**	4
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	
Module Learning Outcomes	

مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Week 16	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		
Recommended Texts		
Websites		

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Baghdad College of Science Department of Chemistry	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	English Language II			**Module Delivery**	
Module Type	BASIC			☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	UOB 206				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	Chemistry		**College**	Science	
Module Leader	Dr. Muthana Hameed Khalaf		**e-mail**	muthana.khalaf@sc.uobaghdad.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**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	07/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	English Language I (UOB 102)	**Semester**	2
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. To develop students' language skills in English, focusing on the intermediate level. 2. To enhance students' ability to communicate effectively and confidently in various everyday situations. 3. To expand students' vocabulary and understanding of grammar structures. 4. To promote cultural awareness and understanding through authentic texts and materials. 5. To provide a solid foundation for further language learning and progression.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate improved proficiency in the four language skills: speaking, listening, reading, and writing. 2. Use a wider range of vocabulary related to various topics and themes. 3. Apply appropriate grammatical structures and language functions in different contexts. 4. Comprehend and analyze authentic texts, including articles, stories, and dialogues. 5. Engage in effective and meaningful communication, expressing opinions, giving presentations, and participating in discussions. 6. Understand and appreciate cultural differences through exposure to diverse texts and materials.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Review of basic grammar and vocabulary from the pre-intermediate level. 2. Everyday activities and routines. 3. Describing past experiences and events. 4. Talking about future plans and intentions. 5. Discussing hobbies, interests, and leisure activities. 6. Describing people's appearance, personality, and character traits. 7. Talking about health and well-being. 8. Giving advice and making suggestions. 9. Discussing environmental issues and sustainability. 10. Describing travel experiences and holiday plans. 11. Discussing cultural topics and traditions. 12. Exploring literature and storytelling. 13. Writing informal and formal letters and emails. 14. Practicing spoken English through dialogues, role-plays, and presentations.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts. 2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously. 3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to

	help students learn and remember new words. 4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly. 5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries. 6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives. 7. Error Correction: Provide constructive feedback and error correction during speaking and writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression. 8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice. 9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement. 10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported. 11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment. 12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2 hours	10% (10)	7	LO #1 - #7
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	A world of difference p6 **Naming tenses** Present, Past, Present Perfect Auxiliary verbs *do, be, have* p6 Qt1estions a11d negatives *Where were you born?* *He doesn't live in Madrid.* p6 Short answers *Yes, I have. No, he didn't.* p8 **Spoke11 Englisl1 - sounding polite** *'Did you have a good day?'* *'Yes, I did. I 1,vent shopping.'* p8 **What's i11 a word?** Parts of speech and meaning verb, adjective, nou11 , or adverb? Spelling and pro11t1nciation vowel sounds word formatio11 *active, actor, action* words that go together *fall in love* **Keeping vocabulary records** p12 **Everyday situations** *I need to make an appointment.* *A medium latte, please.* *Have here or take away?* pl3

Week 2	The working week pl4 **Present tenses** Simple and conti11uous *1!\That does she do?* *li\That's she doing?* pl4 State verbs *like, kno1v, understand* plS Passive *People are employed . . .* *I'm being served.* p17 *How often ... ?* *hardly ever twice a year* plS **Positive and negative adjectives** *hard-working* *bad-tempered* pl9 **Free time activities** *go cycling* *keeping fit* *a recipe, to peel* p20 **Making small talk** *It's such an old city, isn't it?* *I was born in . . . , but I live in . .' .* *Oh, good.* *Really?* *Have you?* *li\fho do you 1,vork for?* **Spoken E1 1glish - softening** **a 11egati,re comme11t** *a bit late not very big* p21
Week 3	Good times, bad times p22 **Past tenses** Sin1ple and continuous *He worked in London.* *He was studying art.* p23 Past Perfect *He had fallen in love.* *He'd been drinking.* p23 *used to* *He used to wake up at 6.00.* p23 **Spelling and pron11nciation** good /gud/, food *If* u:d/ *male, mail* /u:/ tooth trt1tl1 juice p25 **Lost so11nds** *chocilate*

	foreign p25 **Giving opinions** *He's really great, isn't he?* *Definitely! 1\1mm!* *That's rubbish!* **Spoken English - 1naking an opi11ion stronger** *just awful* *absolutely adore* p29
Week 4	Getting it right p32 **Advice, obligation, and permission** i'vlodal a11d related verbs *You should check online.* *You must tell your neighbors.* *They can get married at 16.* *You are allowed to go.* *Children had to go to school.* *They didn't have to 1,vork.* p32-34 **Phrasal verbs (1)** Literal or idio1natic? *She took her boots off* *His business has taken off* *The flight took off on time.* Separable or i11separable? *He turned it on.* *She takes after him.* p36 **Polite req11ests a11d offers** *I'll give you a lift.* *Do you think you could . . . ?* *Can you tell me . . . ?* li\f*o uld you mind . . . ?* p37
Week 5	**Our changing world** p38 Future forms Will, going to, or Prese11t Contint1ous? What will the world be like? Things are going to change. We're meeting James at 11.00. Future possibilities - may, might, could The earth may get warmer. Temperatures might rise. What could happen? p38 **Word building** Suffixes *prediction, excitement* Prefixes *impossible, disagree, react*

	Changing word stress *'advertise I advertisements* p44 **Arrangi11g to n1eet** *I was wondering if 1ve* *could n1eet.* *I'll just get my diary.* *I could have coffee.* *½1hy don't we . . . ?* *Let's . . .* **M11sic of English - n1aking suggestions** p45
Week 6	**What matters to me** p46 **Information questio11s** *What's she like?* *What does she look like?* *How is she?* p46 *How tall/big ... ?* *What colour/size/make . . . ?* *\i\Thich floor/part of town . . . ?* *How far/long ... ?* *How much/many ... ?* p47 **Describing people, places, and things** *He's good fun/very sociable.* p46 *It's cosy/on the fourth floor.* *li\That make is it?* p47 **Adjectives** *-ed I -ing: amazing, amazed* Adjective + nou11: *sandy beach* Compou11d adjectives: *1vell-dressed* p48 **Adverbs** *-ly* a11d not *-ly: simply, fully, just, too* verb + adverb: *wait patiently* **In a department store** *Toys and babywear* *Ladies' fashions* *Stationery* li\f *hat size do you take?* *Keep your receipt.* Signs *Buy two, get one free* *Final clearance* p53
Week 7	Mid-term Exam
Week 8	Passions and fashions p54 **Present Perfect** Simple and continL10L1s *She's lived in Scotland.*

	She's been writing since 1990. p54 Passive *have been sold.* p55 Adverbs *just yet already* p56 Tin1e expressio11s *for 10 years, since the 1970s* **Spoken Englisl1 - *How long ...*** *?* *How long are you here for?* *How long have you been here?* p57 **Likes and dislikes** *adore, loathe,* *keen on, crazy about,* *fond of* p60 **Making tl1e right noises** Agreement, sympatl1y, pleasure, and surprise *Brilliant!* *Fair enough.* *You're kidding!* *You didn't!* **Mt1sic of English - wide voice range** *Hoi-v fantastic!* □ *Did you?* p61
Week 9	**No fear!** p62 **Verb patterns** verb+ *-ing* *enjoy swimming, thinking of staying* p62 verb + infinitive *need to warn, make them feel* p62 adjective + infinitive *impossible to see* p62 **Spoken E11glish - the reduced infi11itive** *I'd love to!* *You promised to.* p64 **Body language** *bite, clap, hug, lick* *point a gun* *kneel down to pray* **Idioms** *see eye to eye* *You're pulling my leg!* p68 **Travel and numbers** Co1n1nas and decimal points *5,000 6.5*

	Tin1e *13.45* Nu1nbers one by one *6356 5055* Percentages *30%* Fractions ; p69
Week 10	It depends how you look at it p70 **Conditionals** Seco11d conditio11als *If I were him, I'd tell.* Third conditio11als *If they'd listened, he wouldn't have run away.* p71 *might have done/could have done* *You might/could have had an accident.* p72 *should have done* *He should have asked for help.* p73 **Words with si1nilar** • **meaning** *shocked I stunned* *delighted I over the moon* *alone I lonely* *win I beat* p76 **Deali11g lvitl1 1no11ey** *Is service included?* *Put in your PIN number and press ENTER.* *The current cleared balance . . .* *I gave you a £20 note.* *What's the exchange rate?* p77
Week 11	All things high tech p78 **Not111 phrases** Articles: *a I the I* no article Possessives *their equipment I theirs* *all/everything* *Microchips control everything.* *all digital devices* Reflexive pro11ouns and *each other* *I cut myself. We love each other.* p79 **Co1npound nou11s** *railway station* *headlight* *tea bag teacup*

	handcuffs footprint p84 ***I need one of those things*** . . . *It's one of those things you use . . .* *I need some of that stuff ...* *It's used for .. .* *It's 1nade of .. .* *It's a kind of .. .* **Mt1sic of English - stress patterns** *I need one of those things you use* *to open a bottle of· 1-vine.* p85
Week 12	Seeing is believing p86 **Modals of probability** Present *must/can't/might/could be* p86 Past *must/can't/might have been* p88 ***looks like! looks*** *It looks like a man.* *It looks red to me.* p86 **Spoken English - expressing disbelief** *What on earth has happened?* p86 **Phrasal verbs (2) with *out*** **and *up*** *work sth out/ 111ork out* *make sth up* *make up with sb* *find out I break up* p92 **Expressing attitude** *apparently* *actuall;1* *personally* *to be honest* p93
Week 13	Telling it how it is p94 **Reported speech** *She said she was a student.* **Reported thoughts** *I thought she was pretty.* **Reported questions** *I asked her 1, what I was happening.* *I 1-vondered if there'd been an accident.* p94 **Reporti11g verbs** *invite, persuade, explain* p96 **Ways of speaking** *suggest, advise, shout,*

	whisper, admit, deny p97 ***You know what they say ...*** Cliches *It's not the end of the world.* *Better late than never.* *Rather you than me.* *It could be worse.* plOl
Week 14	People who changed the ,\l'orld Movers and shakers Fa1nous people, their ideas, and their impact on how people think (jigsaw) p98 he didn't say that! Spotting i11accuracies in five conversatio11s p96 What the papers say A11 inter,,ie,v with the si11ger Jamie Seabrook plOO
Week 15	What do you think? People from your country wl10 changed ideas p98 Newspapers in yot1r country plOO Talki11g about a current nevvs story plOO A thank-you e1nail Correcting 1nistakes (2) in a n1odel email Writi11g a thank-you e1nail pll7
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Soars, John and Liz, (2011), New Headway Plus, Special Edition, Intermediate Level, Oxford University Press.	Yes
Recommended Texts	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments	No
Websites	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, Intermediate" or browse their English language teaching section for information on the course.	

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.