



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Introduction to Chemistry		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UOMU036113		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	1
Administering Department	Dept. of Biochemistry	College	College of Science
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None		Semester

Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents			أهداف المادة الدراسية ونتائج التعلم والمحفوظات الإرشادية
Module Aims أهداف المادة الدراسية	<p>The educational aspect: giving the student an opportunity to appreciate the role of knowledge accumulation in scientific development, by reviewing a number of theories that appeared in different time periods, and how the owners of the late theories benefited from the results of the long-advanced theories.</p> <p>The scientific aspect: (a): identifying the facts that paved the way for the emergence of Bohr's theory and Schrodinger's theory and theory of atomic structure. (b): the most important features of each theory and the strengths, differences and weaknesses between them. (c): Evidence for the validity of each hypothesis. (d): Features of the atomic structure according to each of them (e): The concept of term symbol (f): Knowledge of shielding and its applications.</p>		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Giving the student an opportunity to realize and value the truth, the scientific researcher from among the researchers in different places and different times.</p> <p>Scientific discussion and its role in reaching the right opinion.</p> <p>Information accumulation and its role in reaching the right path.</p> <p>Learn about the (Bohr's, Schrodinger's and of atomic structure) theories.</p> <p>Learn about the energy levels of an atom as well as its composition</p> <p>Study of electromagnetic radiation.</p> <p>Learn about the elements of the periodic table and their periodic properties.</p>		
Indicative Contents المحتويات الإرشادية	<p>- An introduction that includes an introduction to the branches of chemistry with an introduction to the interests of inorganic chemistry, The black body, Max Planck equation, The phenomenon of photoelectric emission. [5 hrs]</p> <p>Einstein's interpretation of the phenomenon of photoelectric emission and the quantity of energy, The specific meaning of the electromagnetic spectrum and its regions, The general meaning of the electromagnetic spectrum and its types. [5 hrs]</p> <p>The emission spectra of the chemical elements and their importance, The emission spectrum of the hydrogen atom, with a focus on the features of the visible part of it, Palmer's equation and the location of the visible spectrum lines of the hydrogen atom, Classification of the emission spectrum lines of the hydrogen atom into groups, with a definition of some of the characteristics of these groups. [5 hrs]</p> <p>The Rydberg equation and the calculation of the wavelengths of the emission spectral lines of the hydrogen atom and hydrogen-like ions, The most important assumptions of Bohr's theory of atomic structure, Reasons for the failure of the Bohr model. [5 hrs]</p> <p>Determine the electronic transitions caused by the various spectral bands that make up the emission spectrum of the hydrogen atom, Rewrite the Rydberg equation in various forms, one of which is used to calculate the wavelength of a given beamline. [5 hrs]</p>		

	<p>Some features of the success of Bohr's theory of atomic structure, De-Begui's equation, Heisenberg's principle of inaccuracy [10 hrs]</p> <p>Introduction to Schrodinger's theory and some of its mathematical expressions. Wave function and electronic potential density. The energy requirement to solve the Schrodinger equation and what it means. Atomic orbitals and their types, and general and specific mathematical expressions for it. [10 hrs]</p> <p>Quantum numbers and their types and what they mean regarding the atomic structure as well as how to find them, The accepted solutions to solve the Schrodinger equation and its implications for the atomic structure, To express the arrangement of shells in atoms with multiple electrons. [10 hrs]</p> <p>Factors affecting the arrangement of shells in polyelectron atoms and the overall arrangement of these shells, with confirmation of anomalies from this arrangement.[5]</p> <p>Electronic distribution on the secondary covers and the rules and principles that govern this distribution (Aufbau; Hund; Pauli's exclusion rule), Examples of the electronic distribution of atoms of various elements, with reference to the abnormal cases [10]</p> <p>A summary of the most important features of Schrodinger's theory, The similarities and differences between Bohr's theory and Schrodinger's theory.[5]</p> <p>Knowledge of the term symbol and its applications on some metals and ions, Knowing the blocking and how it can be calculated and through it knowing the ionic potential. [5 hrs]</p> <p>Midterm exam. [2 hrs]</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>The main strategy for presenting this module will be to stimulate students' engagement in the tasks while also polishing and strengthening their critical thinking abilities. Learn how to benefit from science and modern technologies in dealing with the problems of chemistry, arming the student with application and develop the learner's ability to discuss purposefully. This will be accomplished through (Audio, PowerPoint & video lectures, asking student to contribute to short scientific class discussions. activities that are attractive to the students).</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

<p>Structured SWL (h/sem)</p>	<p>65</p>	<p>Structured SWL (h/w)</p>	<p>4.3</p>
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الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	85	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.6
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	5% (10)	5, 10	LO #3,4, 8 and 9
	Assignments	1	10% (10)	2, 12	LO # 2,11and 12
	Projects / Lab.	1	10% (10)	Continuous	
Summative assessment	Report	1	10% (10)	6	LO # 5, 8 and 10
	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	15	All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	periodic table and elements properties
Week 2	gain and understanding of atom.
Week 3	.learn about subatomic particles , their location relative masses and relative charges.
Week 4	atom theories
Week 5	determine the number of proton ,neutrons ,and electrons in atom learn about isotopes describe atom by their atomic and mass numbers
Week 6	describe an element in an atom through understanding the four quantum number
Week 7	electronic structure.
Week 8	chemicals bond and their structures.
Week 9	inter and intra molecular forces.
Week 10	Lewis structure and octet rule.

Week 11	chemical reaction in aqueous solution.
Week 12	concept of acid and base
Week 13	oxidation Reduction reaction.
Week 14	calculation of oxidative and reductive number.
Week 15	Valence shell Electron Pair Repulsion (VSEPR THEORY)

Delivery Plan (Weekly Lab. Syllabus) المنهج الاسبو عي للمختبر	
	Material Covered
Week 1	Lab 1: laboratory instructions , safety rule , equipment.
Week 2	Lab 2: introduction about laboratory and glasses ware
Week 3	Lab 3: practice with balances (preparation of different types of solution .percentage sol(w/v%, v/v% ,w/w%)ppm).
Week 4	Lab 4: normal solution , molar solution , dilution
Week 5	Lab 5: Preparation and standardization of 0.1 N sodium hydroxide solution using direct titration. neutralization reaction (standardization of NaOH against standard Hcl determination of acetic acid in vinegar)
Week 6	Lab 6: determination and analysis of group one cation
Week 7	Lab 7: Identification of cations group (I) "Lead (II), Mercury (I), and Silver (I)"
Week 8	determination and analysis of group two cation
Week 9	مراجعة (unknown)
Week 10	determination and analysis of group three cation
Week 11	determination and analysis of group four cation
Week 12	مراجعة (unknown)
Week 13	oxid-edox titration of Kmno4 solution against oxalic acid .
Week 14	determination of melting point
Week 15	determination of boiling point
Week 16	Revision

Learning and Teaching Resources مصادر التعلم والتدریس		
	Text	Available in the Library?
Required Texts	“Fundamentals Concepts of Inorganic Chemistry”, by Asim K. Das, 3rd Ed, 2020.	Yes
Recommended Texts	Principle of Inorganic Chemistry”, by Brian W. Pfennig, “. Wiely, 2nd ed, 2022	Yes
Websites	https://www.udemy.com/courses/search/?src=ukw&q=atomic+structure+and+Electronic+Structure+and+Periodic+Table	

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.				