Module Information معلومات المادة الدراسية					
Module Title	Atomic structure and quantum theory			**Module Delivery**	
Module Type	Basic			**Theory** ☒ **Lecture** **Lab** ×**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CHEM 1102				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	CHEM		**College**	Type College Code	
Module Leader	Dr. Ahmed Sabeeh		**e-mail**	ahmed.sabeeh@nahrainuniv.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	Ahmed Al-Ani		**e-mail**	E-mail ☐	
Scientific Committee Approval Date	14/08/2025		**Version Number**	1.0	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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 الارشادية	
Module Aims **أهداف المادة الدراسية**	1- General view to periodic table and atomic structure 2- Quantum Theory and quantum number 3- Energy levels, orbitals and photoelectric effect 4- Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals 5- Atoms, Molecules, Ions and ionic compounds 6- Ionization energy, Atomic Radii, Electron Affinity, electronegativity 7- Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Melting point, Boiling point Solubility Orbital hybridization
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	1. Teach students the principle of chemistry 2. Explain the atomic structures and its compounds 3. Explain some of chemical phenomena 4. Study the properties of some chemical elements 5. Practical and laboratory skills 6. Improvement skills, to improve student's mind and to let students think more about chemistry 7. Productive skills
Indicative Contents **المحتويات الإرشادية**	Indicative content includes the following. 1. Areas of inorganic chemistry 2. The current role of inorganic chemistry 3. Improve the student's mind by how he or she can deal with chemicals and its uses 4. Teach students about hazardous chemicals in the lab and how can avoid any risk in the lab

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• In class interactive lectures involving educational videos • Practical in lab lectures • Adapting interactivity with student's interaction by raising a question and asking the group to find the relevant answers to them as a main way of teaching. • Power point presentation, examples from books and internet

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) **الحمل الدراسي المنتظم للطالب خلال الفصل**	48	**Structured SWL (h/w)** **الحمل الدراسي المنتظم للطالب أسبوعنا**	3.2
Unstructured SWL (h/sem) **الحمل الدراسي الغير المنتظم للطالب خلال الفصل**	102	**Unstructured SWL (h/w)** **الحمل الدراسي الغير المنتظم للطالب أسبوعنا**	6.8
Total SWL (h/sem) **الحمل الدراسي للطالب خلال الفصل**	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	25% (50)	2, 5, 10, 12	LO #1, 2, 10 and 11
	Assignments				
	Projects / Lab.	1	5% (5)	Continuous	All
	Report/ Lab.	1	10% (10)	Continuous	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1-2	Atomic Structure, Quantum Theory and quantum number
Week 3-5	Energy levels, orbitals and photoelectric effect, Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals
Week 6-8	Atoms, Molecules, Ions and ionic compounds
Week 9-12	Ionization energy, Atomic Radii, Electron Affinity, electronegativity
Week 13-15	Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Melting point, Boiling point Solubility Orbital hybridization
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Inorganic chemistry, Sharpe, A. G. (Alan George), Harlow: Longman Scientific and Technical, 3rd Edition 1992	Yes
Recommended Texts	Basic Inorganic Chemistry F. Albert Cotton, Geoffrey Wilkinson, Paul L. Gaus, , 3rd Edition, 1995	Yes
Websites	https://courses.lumenlearning.com/boundless-chemistry/chapter/the-structure-of-the-atom/ https://www.acs.org/content/acs/en/careers/chemical-sciences/areas/inorganic-chemistry.html https://courses.lumenlearning.com/boundless-chemistry/chapter/periodic-trends/	

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.