MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Inorganic Chemistry I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Che-1112**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jinan Mohammed Mahmoud		**e-mail**	jinan.mohammed@uodiyala.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	01/06/2023		**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 Objectives أهداف المادة الدراسية	This module aims to: 1. Introduce the fundamental principles of inorganic chemistry, including atomic structure, chemical bonding, periodicity, and redox chemistry. 2. Develop an understanding of the periodic table as a tool for predicting the physical and chemical behavior of elements, particularly main group (s- and p-block) elements. 3. Explain the structure and bonding of molecules and solids, using classical and modern bonding theories such as VSEPR and Molecular Orbital Theory. 4. Familiarize students with acid-base and redox concepts, relevant to inorganic systems, including the use of oxidation numbers and acid-base classifications. 5. Explore the structures of crystalline solids, including types of unit cells and how they relate to material properties.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**A- Cognitive goals** 1- Enable students to obtain knowledge and understanding of inorganic chemistry. 2- Enable students to obtain knowledge and understanding of the chemical elements in the periodic table. 3- Enable students to obtain knowledge and understanding of the chemical structures of inorganic compounds. 4- Enable students to obtain knowledge and understanding of reactions in inorganic chemistry. 5- Enable students to obtain knowledge and understanding of practical experiments in inorganic chemistry. **B - The soft skills objectives of the course** 1 - knowledge skills - remembering. 2 - application and analysis skills. 3 - Use and development skills. 4- evaluation and creativity skills.
Indicative Contents المحتويات الإرشادية	This semester focuses on the study of atomic structure and the electronic configuration of elements, along with their arrangement in the periodic table according to groups and periods. The course covers the rules and regulations governing the allowed orbitals for electron placement in the main shells. It also explores the periodic

	properties of elements. Additionally, the course addresses the atomic states (term symbols) of elements to facilitate investigation into the properties and crystal structures of ionic compounds.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Power point lecture method using data show and whiteboard. Explanation and clarification. Providing students with the basics and additional topics related to the outputs of inorganic chemical thinking and analysis. Forming discussion groups during lectures to discuss inorganic chemistry topics that require thinking and analysis. Asking students a set of thinking questions during the lectures such as what, how, when and why for specific topics. Giving students homework that requires self-explanations in causal ways.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
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	**150**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 11	LO #3, #4 and #6, #9
	Assignments	2	10% (10)	4 and 12	LO #5, #7 and #10, #11
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1, #2 and #12
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction about inorganic chemistry , Atomic structure :Basic structure atom , Rutherford nuclear atom, The origins of radiation, Wave properties of radiation , intra nuclear processes radioactivity.
Week 2	Theory of Bohr's model of hydrogen atom : Fall through Bohr theory and hydrogen-like atoms, modification of Bohr's theory (Elliptical Orbit , Zeeman effect, Fine structure).
Week 3	De Broglie Waves in the hydrogen Atom , Heisenberg's uncertainty principle , The Schrödinger equation, Quantum numbers.
Week 4	Examples and solutions
Week 5	Atomic orbital's
Week 6	Periodic table , Reading the periodic table, Electron configuration :Aufbau principle , Pauli exclusion principle , Hund's rules of maximum multiplicity
Week 7	Classification of elements : Based on their general properties , the representative elements.
Week 8	**Midterm Exam**
Week 9	Atomic Term symbols: Assigning Term symbols , Microstates.

Week 10	Examples and solutions
Week 11	Periodic Trends :Shielding and effective nuclear charge.
Week 12	Ionization Energy (IE)or Ionization Potential (IP) , Atomic radius, Metallic radius .
Week 13	The electronegativity :Calculation of electronegativity .
Week 14	Electron affinity.
Week 15	Examples and solutions
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	الكيمياء اللاعضوية ، تأليف الدكتورة ثناء جعفر محمد الحسني ، 1989	Yes
Recommended Texts	Inorganic Chemistry principles of structure and reactivity 4th ed, by James E. Huhhey et al, Harper Collins college Puplishers (1993) Inorganic Chemistry, 5th Edition; Gary. L. Miessler and	No

	Donald . A. Tarr (2014).	
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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.