

نموذج توصيف مقرر
Course Description Form

Name of College\Faculty : Science
Name of Department: Chemistry

اسم الكلية:
اسم القسم العلمي:

Course Name	Inorganic Chemistry I	اسم المقرر
Course No.	0420-233	رقم المقرر
No. of Credits	3	عدد الوحدات
Theoretical Hours	3	عدد الساعات النظرية
Practical Hours	0	عدد الساعات المعملية
Course topics	1. Wave and particles, quantization of energy. 2. Atomic theory 3. The theories of covalent bonding and covalent compound 4. The ionic bonding and ionic compounds. 5. The chemistry of hydrogen. 6. General chemistry trends of groups (IA to VIIA). 7. The chemistry of group VIIIA (Noble gases). 8. Molecular Symmetry	مواضيع المقرر
Text book: (Name, Author , Year , Publisher) عنوان الكتاب : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)		
Inorganic Chemistry: "Inorganic Chemistry" by Catherine E. Housecroft, Lang G. Sharpe, Fifth edition (or latest edition)		
References: (Name , Author , Year . Publisher) عنوان المرجع : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)		
1. Inorganic Chemistry, by A.G. Sharpe, Longman, New York, 1992, Latest Edition. 2. Inorganic Chemistry by D.F. Shriver, P.W. Atkins and C.H. Longford, Oxford University Press, Oxford, 1994, Latest Edition. 3. Advanced Inorganic Chemistry by F.A. Cotton and G. Wilkinson, John Wiley & Sons, New York, Latest Edition.		

Prerequisites : 0420-102, 0420-106				متطلبات المقرر	
Grading	Exams		%		الاختبارات
	Quizzes		%		امتحانات قصيرة
	H.W.		%		واجبات
	Lab		%		مشاريع (دراسة ميدانية)
	Final		%		الاختبار النهائي
	100%				آلية رصد المقرر

Textbook chapters

Chapter	Topic	Sections Included
1	Atomic theory (Quantization of energy deBroglie equation and dualism of light properties, Uncertainty principle, Schrödinger equation, quantum numbers, radial and angular wave function)	1 - 10
5	The theories of covalent bonding (Valence bond theory, Molecular orbital theory for simple molecules)	2, 4
6	The ionic bonding and ionic compounds (	11 - 11
10	The chemistry of hydrogen	1 - 7
11-17	General chemistry of groups (IA to VIIA)	2- 6 from each chapter
18	The chemistry of Noble gas	1 - 4
3	Molecular Symmetry (symmetry operation, symmetry elements, point groups)	1 - 4

Course objectives					
No.	Course Objectives (Learning Outcomes)	Example(s) of relevant (Topics and activities)	Recommended Level to satisfy the objectives		
			High	Medium	Low
1	1.1 illustrate the different theories and experimental evidences to wave-particle dualism. 1.2 apply the solution of wave equation (<i>Schrödinger equation</i>) for hydrogen atom to derive the four quantum numbers and the shapes of the atomic orbitals.				
2	2.1 describe the valence bond formation by explaining VSEPR model, VBT and hybridization.				



	2.2 sketch the shapes of different molecules based on the types of the hybrid orbitals 2.3 describe MOT for the formation of simple homo- and hetero-diatomic and polyatomic molecules. 2.4 sketch the molecular orbital energy level diagrams for these molecules showing the nature of bonding, bond order and the magnetic properties. 2.5 define the polar bonds and the knowledge of their formation requirements. 2.6 define the ionic bonds and ionic crystals. 2.7 apply the radius ratio rule to determine the shape of the crystal. 2.8 determine the different methods for the estimation of the lattice energy for the ionic compound. 2.9 illustrate the periodicity within the periodic table with application to the main group elements				
3	3.1 describe the nature of hydrogen, isotopes and the properties of water as a solvent for ionic compounds. 3.2 obtain useful information about the nature of the hydronium ion. 3.3 specify the general chemistry trend, the occurrence and isolation of elements and compounds of interest of group IA to VIIA elements. Comparative studies of the elements of the different groups. 3.4 describe the different chemical and physical properties of the noble gases (group VIII). 3.5 describe molecular symmetry; symmetry operation, symmetry elements and point groups				
Fields					
Skills					
Coordinator (Name and Rank) :	Convener of the Inorganic and Analytical Chemistry group				
Signature and stamp :					
Date:	11/11/2025				