



UNIVERSITI TEKNOLOGI MARA

CHM474: INORGANIC CHEMISTRY I

Course Name (English)	INORGANIC CHEMISTRY I APPROVED
Course Code	CHM474
MQF Credit	3
Course Description	This course will provide students cognitively and scientifically with knowledge of the chemistry of the covalent bonds, the periodic trends of elements, the intermolecular forces in covalent compounds, the chemistry of inorganic solids, transition metals and coordination compounds. Students will define concepts, state and explain various laws and theories. They will perform investigations via laboratory exercises, make predictions as to the possible outcome of an experiment and subsequently discuss the results and the findings in the form of a written report
Transferable Skills	Knowledge in identifying elements in periodic table. Conducting experimental work based on titration, synthesis work and dilution method.
Teaching Methodologies	Lectures, Lab Work, Presentation
CLO	CLO1 Describe physical properties of elements in the periodic table and the geometry of molecules/polyatomic ions based on the Valence Bond Theory CLO2 Illustrate various types of intermolecular forces, crystals and defects structures CLO3 Elucidate the geometry, isomerism and hybridization of coordination compounds CLO4 Conduct and write report on experimental findings of this course in scientific manner
Pre-Requisite Courses	No course recommendations
Topics	
1. The Chemistry of The Elements 1.1) Radii of Atoms and Ions, Ionization Energies and Electron Affinities. 1.2) Pauling's Electronegativity Values (ionic/polar covalent/pure covalent compounds) 1.3) Bond Polarity and Dipole Moment 1.4) Partial Ionic Character of Covalent Bonds 1.5) Molecular Polarity	
2. Molecular Geometry 2.1) Lewis Structures and VSEPR 2.2) Valence Bond 2.3) Orbital Hybridization 2.4) Intermolecular forces in covalent compounds	
3. Crystalline and Solid State 3.1) Crystal Structures 3.2) Metallic Crystal Structures 3.3) Ionic lattice (NaCl, CsCl, ZnS) 3.4) Giant Molecule Crystal Structures 3.5) Defect Structures 3.6) Stoichiometric Defect 3.7) Non-stoichiometric Defect 3.8) Semiconductor 3.9) Metallic Bonding 3.10) Electron Sea Model 3.11) Band Theory of Metals	

4. Transition Metals and Coordination Compounds

- 4.1) Transition Metals
- 4.2) Electron configuration
- 4.3) General characteristics of transition metals: variable oxidation states, formation of complexes, colored compounds, magnetism
- 4.4) Coordination Compounds
- 4.5) Ligands
- 4.6) Coordination number
- 4.7) Nomenclature
- 4.8) Addition and substitution reactions of coordination compounds
- 4.9) Isomerism
- 4.10) Structural Isomerism
- 4.11) Stereoisomerism
- 4.12) The Elements in Nature and Industry Metallurgy

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Presentation	Video presentation based on the topic given by the lecturer	15%	CLO1
	Quiz	Cumulative of three quizzes	15%	CLO2
	Test	Cumulative of four tests	50%	CLO3
	Written Report	Lab Report	20%	CLO4

Reading List	Recommended Text
	<ul style="list-style-type: none"> • Silberberg 2015, <i>Chemistry</i>, 7th Ed., McGraw Hill, NY New York [ISBN: 978981464645] • Raymond Chang, Kenneth A. Goldsby 2013, <i>Chemistry</i>, 7th Ed. [ISBN: 9789814599788]

Article/Paper List	This Course does not have any article/paper resources

Other References	This Course does not have any other resources