



UNIVERSITI TEKNOLOGI MARA

CHM577: INORGANIC CHEMISTRY

Course Name (English)	INORGANIC CHEMISTRY APPROVED
Course Code	CHM577
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
CLO	CLO1 Describe physical properties of elements in the periodic table, the geometry of molecules/polyatomic ions based on the Valence Bond Theory and various types of intermolecular forces, crystals and defects structures. CLO2 Elucidate the geometry, isomerism and hybridization of coordination compounds. CLO3 Conduct experiments related to inorganic analysis.
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	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Test	Test 1	15%	CLO1
	Test	Test 2	15%	CLO2
	Written Report	1 Lab Report (Cumulative of 4 lab topics)	20%	CLO3

Reading List	Recommended Text
	<ul style="list-style-type: none"> • Martin Silberberg 2015, <i>Chemistry</i>, 7th Ed., McGraw Hill New York [ISBN: 978981464645] • Raymond Chang, Kenneth A. Goldsby 2013, <i>Chemistry</i>, 11th Ed., McGraw Hill New York [ISBN: 9789814599788]

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

Other References
This Course does not have any other resources