



## UNIVERSITI TEKNOLOGI MARA

### CHM574: INORGANIC CHEMISTRY II

<b>Course Name (English)</b>	INORGANIC CHEMISTRY II <b>APPROVED</b>
<b>Course Code</b>	CHM574
<b>MQF Credit</b>	3
<b>Course Description</b>	This course will interactively engage students cognitively and scientifically in areas of bonding in chemical substances particularly those involving elements in the second period, transition metals and ligands (coordination compounds) and the role these compounds play in some biological systems. The designated lecture sessions are used to describe, discuss and employ important theories in Inorganic Chemistry. Lecture sessions employ a mixture of lectures and active learning (self and peer discussions). The outcomes shall be assessed through a variety of tools which include quizzes, tests, assignment and a traditional final examination.
<b>Transferable Skills</b>	Lecture
<b>Teaching Methodologies</b>	Lectures
<b>CLO</b>	<p>CLO1 Explain the concepts of Molecular Orbital Theory, Valence Bond Theory, Crystal Field Theory, magnetism properties of complexes, stabilization of complexes and the significance of metal complex in biological system</p> <p>CLO2 Apply the concepts to solve problems in Molecular Orbital Theory, Valence Bond Theory, Crystal Field Theory, magnetism properties of complexes and stabilization of complexes</p> <p>CLO3 Illustrate the concepts to solve problems in Molecular Orbital Theory, Valence Bond Theory, Crystal Field Theory, magnetism properties of complexes and stabilization of complexes</p> <p>CLO4 Deduce in a written form the importance of metal complex in biological system</p>
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	<p><b>1. 1. Molecular Orbital Theory</b></p> <p>1.1) Orbital Shapes and Energies (s, p and d)</p> <p>1.2) Types Of Molecular Orbitals</p> <p>1.3) Homonuclear Diatomic Molecules (Second Period Elements)</p> <p>1.4) Heteronuclear Diatomic Molecules (NO, CN, CO, HF)</p> <p>1.5) Bond Order, Bond Energy and Bond Length</p> <p>1.6) Metal-Carbon Bonds in Carbonyl Complexes</p> <p><b>2. 2. Coordination Compound</b></p> <p>2.1) Valence Bond Theory (sp<sup>3</sup>, dsp<sup>2</sup>, d<sup>2</sup>sp<sup>3</sup> and sp<sup>3</sup>d<sup>2</sup>)</p> <p>2.2) Crystal Field Theory</p> <p>2.3) Magnetic Properties of Complexes</p> <p>2.4) Stabilization of Complex Ions</p> <p><b>3. 3. Metal complex in biological system</b></p> <p>3.1) Essential roles in biochemistry</p> <p>3.2) Hemoglobin</p>

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Accumulative 2 Assignments	40%	CLO3
	Presentation	Presentation	20%	CLO4
	Quiz	Quiz 1	10%	CLO1
	Test	Test 1	10%	CLO1
	Test	Accumulative 2 Tests	20%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> <li>• Gary L. Miessler, Donald Arthur Tarr 2011, <i>Inorganic Chemistry</i>, 4 Ed., PEARSON USA [ISBN: 9780136153832]</li> <li>• Steven Zumdahl, Susan Zumdahl 2006, <i>Chemistry</i>, 7 Ed., HOUGHTON MIFFLIN USA [ISBN: 9780618528448]</li> <li>• Martin Stuart Silberberg 2009, <i>Chemistry</i>, 5 Ed., MCGRAW-HILL USA [ISBN: 9780071283540]</li> <li>• Cotton 2007, <i>BASIC INORGANIC CHEMISTRY, 3RD ED</i>, 3 Ed., John Wiley &amp; Sons USA [ISBN: 9788126511143]</li> <li>• Cotton 2007, <i>ADVANCED INORGANIC CHEMISTRY, 6TH ED</i>, 6 Ed., John Wiley &amp; Sons USA [ISBN: 9788126513383]</li> </ul>
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	