

<b>Module code</b>	SC- 1211		
<b>Module Title</b>	Fundamentals of Inorganic Chemistry		
<b>Degree/Diploma</b>	Bachelor of Science (Chemistry)		
<b>Type of Module</b>	Major Core		
<b>Modular Credits</b>	4	<b>Total student Workload</b>	8 hours/week
		<b>Contact hours</b>	4 hours/week
<b>Prerequisite</b>	None		
<b>Anti-requisite</b>	TG-1202 Fundamentals of Inorganic Chemistry for Engineers		
<b>Aims</b>			
This module provides an introduction to the chemistry of the representative elements. The properties of the elements and their compounds will be underpinned by a theoretical framework based on current models of bonding. Laboratory skills including synthesis of metal complexes and hands-on instrumentation will be learnt in practical classes.			
<b>Learning Outcomes</b>			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	30%	- understand the fundamental concepts and theoretical principles of inorganic chemistry in detail	
Middle order :	60%	- explain the atomic structure based on quantum mechanics and explain the periodic properties of atoms - explain the structure and bonding in solids and molecules - predict the structures of ionic compounds	
Higher order:	10%	- conduct chemical experiments, analyse and interpret results - demonstrate efficiency in the use of appropriate instrumentation for chemical analysis - work effectively in diverse team in both classroom and laboratory	
<b>Module Contents</b>			
<ul style="list-style-type: none"> <li>- Atomic structure: wave mechanics and quantum theory</li> <li>- Chemistry of the alkali and alkaline earth metals</li> <li>- Periodic Table, periodic properties and periodic trends</li> <li>- Covalent bond theory, Linear Combination of Atomic orbitals, Valence bond theory</li> <li>- Lewis structures, Valence Shell Electron Pair Repulsion Theory</li> <li>- Construction of molecular orbitals of the diatomic molecules of the second period</li> <li>- Molecular orbital theory for homo-nuclear and hetero-nuclear diatomic molecules, magnetic properties, bond order, bond length and strength, electronegativity</li> <li>- Solid state chemistry of AB, AB<sub>2</sub> and AB<sub>3</sub> ionic solids,; study of rock salt, fluorite, zinc blende, wurtzite, rutile and layer structures</li> <li>- study of packing of spheres, applications of packing of spheres, size of ions and lattice energy</li> <li>- intermolecular forces: hydrogen bonding, metallic bonding and Van der Waals forces</li> </ul>			
<b>Assessment</b>	Formative assessment	Tutorial and feedback	
	Summative assessment	Examination: 60% Coursework: 40% - 2 practical reports (20%) - 2 class tests (20%)	