Module code	SC- 1211		
Module Title	Fundamentals of Inorganic Chemistry		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Major Core		
Modular Credits	4	**Total student Workload**	8 hours/week
		Contact hours	4 hours/week
Prerequisite	None		
Anti-requisite	TG-1202 Fundamentals of Inorganic Chemistry for Engineers		

Aims

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.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

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

Module Contents

- Atomic structure: wave mechanics and quantum theory
- Chemistry of the alkali and alkaline earth metals
- Periodic Table, periodic properties and periodic trends
- Covalent bond theory, Linear Combination of Atomic orbitals, Valence bond theory
- Lewis structures, Valence Shell Electron Pair Repulsion Theory
- Construction of molecular orbitals of the diatomic molecules of the second period
- Molecular orbital theory for homo-nuclear and hetero-nuclear diatomic molecules, magnetic properties, bond order, bond length and strength, electronegativity
- Solid state chemistry of AB, AB_2 and AB_3 ionic solids,: study of rock salt, fluorite, zinc blende, wurtzite, rutile and layer structures
- study of packing of spheres, applications of packing of spheres, size of ions and lattice energy
- intermolecular forces: hydrogen bonding, metallic bonding and Van der Waals forces

Assessment	Formative assessment	Tutorial and feedback
	Summative assessment	Examination: 60%
		Coursework: 40% - 2 practical reports (20%) - 2 class tests (20%)