

Subject Title	:	Fundamental Chemistry
Code	:	ABCT103
Level	:	1
Credit Value	:	3.00
Offering Department	:	Department of Applied Biology & Chemical Technology
Offering Semester	:	1
Pre-requisite(s)	:	Nil
Co-requisite(s)	:	Nil
Exclusion(s)	:	Nil
Medium of Instruction	:	English
Contact Hours		
Lecture	:	36 hours
Tutorial	:	6 hours
Total	:	42 hours
The students are also expected to spend about 80 hours for self-study.		
Objectives		
<p>This subject educates student with fundamental knowledge in chemistry. It is also a bridging course for students previously learned chemistry in a language other than English.</p> <p>The subject aims to:</p> <ol style="list-style-type: none"> 1. provide students with a broad fundamental knowledge in chemistry required for the study of science, technology, engineering or related programme; and 2. help student study chemistry effectively in an English-medium learning environment and to acquaint student with the necessary chemical vocabularies. 		
Learning Outcomes		
<p>On successful completion of this subject, students are expected to be able to:</p> <ol style="list-style-type: none"> 1. understand the fundamental principles of chemistry; 2. have sufficient chemical knowledge for their chosen field of study; and 3. understand and appreciate the chemical terms and principles that they may encounter in written and oral communication. 		
Teaching and Learning Approach		
<p>Lectures will provide students with general outlines of key concepts and guidance on further reading. Lectures will be further consolidated through assignments and tutorials. Students will be assessed by assignments, quizzes as well as an end-of-term written examination.</p>		
Assessment Method		
Continuous Assessment	:	60%
Examination	:	40%
Total	:	100%
Keyword Syllabus		
<ol style="list-style-type: none"> 1. Atomic Structure Electromagnetic radiation, hydrogen spectrum, energy levels, electron spin, quantum numbers, dual properties of matter, wave function and probability, uncertainty principle, charge clouds of s, p, d and f orbitals, radial distribution curves, electronic configurations of many-electron atoms, Pauli exclusion principle, Aufbau principle, ionization energy, electron affinity, electronegativity, atomic and ionic radii and periodicity. 2. Chemical bonding Ionic bonds, covalent bonds, dative bonds, metallic bonds, van der Waals forces, hydrogen bonds, concepts of valence bond theory and hybridization, resonance, molecular shapes by VSEPR method, molecular orbital theory of homonuclear and heteronuclear diatomic molecules, multi-centre bonding in electron deficient molecules. 3. Properties of solid Solids: amorphous solids, types of crystals, unit cell, co-ordination number, closest packing, crystal structures. 		

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| <p>4. General Inorganic Chemistry
Main group elements and their compounds.</p> <p>5. General Organic Chemistry
Simple concept of orbital hybridisation of carbon: sp, sp^2 and sp^3. Naming of compounds containing carbon chains and rings. Isomerism, regioisomer and optical isomer. A preliminary study of the functional group: alkane, alkene, alcohol, aldehyde, ketone, carboxylic acid, ester. Direct and simple functional group transformations.</p> |
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Essential Reading

Chang R. (2002). <i>Chemistry</i> , 7th ed. McGraw-Hill.
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