Subject Description Form

Subject Code	ABCT1741
Subject Title	**General Chemistry I**
Credit Value	3
Level	1
Prerequisite	HKDSE Chemistry/Combined Science with Chemistry component Level 3; or ABCT1700 Introduction to Chemistry; or ABCT1D01 Chemistry and Modern Living.
Objectives	▪ To introduce a molecular perspective for understanding the natural world. ▪ To identify the fundamental principles underlying any physical and chemical changes of matters. ▪ To visualize the physical and chemical changes through the understanding of molecular behavior.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Understand the macroscopic properties of the states of matters; b. Understand the basic principles of chemical energetics and equilibria; c. Apply and incorporate the chemical principles and knowledge learned to solve chemical problems and to appreciate modern applications in real life; d. Demonstrate the abilities in communication as well as skills in problem- solving and analytical thinking.
Contribution to Programme Outcomes (Refer to Part I Section 10)	▪ Programme Outcome 1: Demonstrate an ability to apply knowledge of mathematics, science, and engineering appropriate to the Biomedical Engineering (BME) discipline. (Teach)
Subject Synopsis/ Indicative Syllabus	**Measurement in Chemistry:** Significant figures; SI units; substances and mixtures; solution and concentration; mole and Avogadro's number; chemical reactions and balanced equations; and temperature scales. **Principle of Chemical Equilibria**: law of chemical equilibrium and equilibrium constant; and Le Chatelier principle. **Acid–Base Equilibria in Aqueous Solutions:** Ionization of water; pH, pOH, and pKw; acids and bases; polyprotic acids; buffers; and solubility equilibria. **Solubility and Complex–Ion Equilibria**: Solubility constants and solubility; common ion effects; precipitation; and equilibria involving complex ions.

<table>
<tr><td></td><td colspan="10">Structures and Reactions of Organic Compounds: Isomerisms; functional groups of organic compounds; nucleophilic substation reactions; elimination reactions; addition reactions of alkenes; electrophilic aromatic substitution; reactions of alkanes; polymers; and polymerization reactions.</td></tr>
<tr><td>Teaching and Learning Methodology</td><td colspan="10">Lectures supplemented with guided reading will be used to introduce the key concepts of the topics. Homework or assignments would be given for students to enhance their learning. Tutorials will be arranged and students would be assigned in small groups for discussion.</td></tr>
<tr><td rowspan="5">Assessment Methods in Alignment with Intended Learning Outcomes</td><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="8">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Continuous assessment</td><td>50%</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Examination</td><td>50%</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>100%</td><td colspan="8"></td></tr>
<tr><td rowspan="7">Student Study Effort Expected</td><td colspan="9">Class contact:</td><td></td></tr>
<tr><td colspan="9">▪ Lectures</td><td>26 Hrs.</td></tr>
<tr><td colspan="9">▪ Tutorials</td><td>13 Hrs.</td></tr>
<tr><td colspan="9">Other student study effort:</td><td></td></tr>
<tr><td colspan="9">▪ Self-study</td><td>67 Hrs.</td></tr>
<tr><td colspan="9">▪ Homework and assignments</td><td>20 Hrs.</td></tr>
<tr><td colspan="9">Total student study effort</td><td>126 Hrs.</td></tr>
<tr><td>Reading List and References</td><td colspan="10"><u>Essential Reading</u>
▪ Petrucci, Herring, Madura, and Biossonnette, General Chemistry: Principle and Modern Applications, 10th edition, 2011, Pearson.</td></tr>
<tr><td>Date of Last Major Revision</td><td colspan="10">14 July 2014</td></tr>
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