Subject Description Form

Subject Code	ABCT2101
Subject Title	Biochemistry
Credit Value	3
Level	2
Pre-requisite	General Chemistry I, General Biology
Co-requisite	Nil
Exclusion	Introductory Cell Biology and Biochemistry (The subject "Biochemistry" and "Introductory Cell Biology and Biochemistry" are mutually exclusive of the other)
Objectives	The aims of this subject are for students to acquire a basic understanding of common biomolecules such as carbohydrates, lipids, amino acids and enzymes; and to appreciate the importance of their unique structure and biochemical reactions involved.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. recognize the structure and properties of simple carbohydrates, lipids, and amino acids; and relate the structure and function of various important biomolecules. b. understand the basic principles of carbohydrate and lipid metabolism to appreciate how energy is being preserved, and extracted and utilized in biological systems. c. explain the essential principles of enzymology and solve problems in enzyme kinetics and mechanisms. d. apply the basic biochemical techniques on enzyme characterization and metabolite assays and interpret and analyze biochemical data. e. develop analytical, critical thinking, and written communication skills.
Subject Synopsis/ Indicative Syllabus	Carbohydrate structure, properties and functions (4 hours) Glycolysis and Tricarboxylic Acid Cycle (4 hours) Electron transport and oxidative phosphorylation (4 hours) Lipid structure, properties and functions (4 hours) Lipid metabolism: beta-oxidation (2 hours) Amino acids, covalent structure of proteins (6 hours) 3-D structure of proteins, protein folding/dynamics/function, haemoglogin (5 hours) Basic principles of enzymology; enzyme kinetics and mechanism (14 hours)
Teaching/Learning Methodology	Lectures are designed to provide students with the basic concepts of structure-function relationship of common biolmolecules and the principles of metabolism and enzymology. To enhance their learning and knowledge, problem-based

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<tr><td></td><td>learning approach will be adopted. Students will be given assignments in some topics for further exploration in depth to gain thorough understanding. Tutorial classes and Blackboard platform will be used to gauge their learning and performance. Laboratory classes are used to introduce to students some basic techniques in biochemistry and to develop their skills in data interpretation and report writing. A variety of assessment tools will be used, including quizzes, assignments, and reports to develop students' analytical skills, critical thinking and communication skills.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="5">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>e</td></tr>
<tr><td>1. Attendance</td><td>5</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>2. Assignments</td><td>5</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr>
<tr><td>3. Lab reports</td><td>20</td><td>√</td><td></td><td></td><td>√</td><td>√</td></tr>
<tr><td>4. Quizzes</td><td>20</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr>
<tr><td>5. Examination</td><td>50</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="5"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assignments, quizzes and examination are used to gauge how much students have learned in the structure-function relationship of different common biomolecules, basic metabolism and enzymology. Writing skills will be assessed in all the assessment tasks and methods. The laboratories and laboratory reports in particular demand students to demonstrate their competence in executing biochemical assays and in the interpretation and analysis of experimental data.

Students are required to attend at least 75% of scheduled sessions for the subject. Students fail to fulfill the attendance requirement will lose the 5% attendance score and not be eligible to register ABCT3108.</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lecture</td><td>26 Hrs.</td></tr>
<tr><td>▪ Tutorial</td><td>5 Hrs.</td></tr>
<tr><td>▪ Laboratory</td><td>12 Hrs.</td></tr>
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	Other student study effort:	
	▪ Report writing	9 Hrs.
	▪ Assignment	4 Hrs.
	▪ Self study	74 Hrs.
	Total student study effort	130 Hrs
Reading List and References	**<u>Essential</u>** Nelson, D. L. and Cox, M.M. Lehninger Principles of Biochemistry, 6th Ed. Worth 2013	