

Table 3. Summary of information on each course / module

1.	<b>Name of Subject:</b> Organic Chemistry																							
2.	<b>Subject Code:</b> PCM0065																							
3.	<b>Status of Subject:</b> Core																							
4.	<b>Stage:</b> Foundation																							
5.	<b>Version:</b> Date of Previous Version:- Dec 2010 Date of Current Version – Oct 2011																							
6.	<b>Name (s) of academic staff:</b> Ho Sew Tiep Muharniza Azinita Binti Musa																							
7.	<b>Rationale for the inclusion of the course/module in the programme:</b> To equipped Foundation in Life Sciences students with the basic knowledge and skills in their pursuit of the degree in Life Science disciplines.																							
8.	<b>Semester and Year offered:</b> Trimester 2																							
9.	<b>Total Student Learning Time (SLT)</b>	<b>Face to Face</b>				<b>Total Guided and Independent Learning</b>																		
	L = Lecture T = Tutorial P = Practical O = Others (Mid Term + Final)	L 27	T 9	P 8	O 3	Guided (27+9+8+3) = 47 Independent = 85 Total = 132																		
10.	<b>Credit Value:</b> 3 (132/40 = 3.3)																							
11.	<b>Prerequisite (if any):</b> NIL																							
12.	<b>Learning outcomes:</b> <ol style="list-style-type: none"> <li>Describe the structure and nomenclature of various organic compounds (Cognitive, Level 1)</li> <li>Define the physical properties of various organic compounds (Cognitive, Level 1)</li> <li>Apply various important reactions (Cognitive, Level 3)</li> <li>Comprehend the chemistry of carbohydrates, amino acids, proteins and lipids (Cognitive, Level 2)</li> </ol>																							
13.	<b>Synopsis:</b> The subject covers the properties and reactions of various classes of organic compounds such as hydrocarbons, alcohols, haloalkanes, aromatic compounds, carbonyl compounds, carboxylic compounds, amines, carbohydrates, amino acids, proteins and lipids. Besides, Chemistry experiments in this course provide knowledge on the properties of organic compounds by direct manipulation through experiments. Chemical transformations from one class of compound to the others are studied and the skills to effect the changes are emphasized.																							
14.	<b>Mode of Delivery:</b> Lecture, tutorial and laboratory																							
15.	<b>Assessment Methods and Types:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">i.</td> <td style="width: 75%;">Assignments</td> <td style="width: 20%; text-align: right;">10%</td> </tr> <tr> <td>ii.</td> <td>Lab Reports</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>iii.</td> <td>Class Quizzes</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>iv.</td> <td>Midterm Test</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>v.</td> <td>Final Exam</td> <td style="text-align: right;">50%</td> </tr> <tr> <td></td> <td><u>Total</u></td> <td style="text-align: right;"><u>100%</u></td> </tr> </table>						i.	Assignments	10%	ii.	Lab Reports	10%	iii.	Class Quizzes	10%	iv.	Midterm Test	20%	v.	Final Exam	50%		<u>Total</u>	<u>100%</u>
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	<u>Total</u>	<u>100%</u>																						
16.	<b>Mapping of the course/module to the Programme Learning Outcomes:</b>					<b>% of contribution</b>																		
	<ul style="list-style-type: none"> <li>• To acquire basic knowledge and principles of science and engineering.</li> </ul>					57																		
	<ul style="list-style-type: none"> <li>• To apply basic techniques, skills and engineering principles</li> </ul>					43																		

through class activities and project works.

17.

**Content outline of the course/module and the SLT per topic:**

TOPIC	Content Outline	SLT		
		Lecture	Tutorial/ Practical	Self- study
<b>1</b>	<b>Introduction</b> Bond Angles and Shape of Molecules, Polar and Nonpolar Molecules, Resonance, Functional Groups, Isomerism, Chirality	3	1	4
<b>2</b>	<b>Alkanes and Cycloalkanes</b> Introduction, Structure of Alkanes, Constitutional Isomerism in Alkanes, Nomenclature of Alkanes, Cycloalkanes, The IUPAC System of Naming, Cis-trans Isomerism in Cycloalkanes, Physical Properties of Alkanes and Cycloalkanes, Reactions of Alkanes	3	1	4
<b>3</b>	<b>Alkenes and Alkynes</b> Introduction, Structure, Nomenclature, Physical Properties, Reactions of Alkenes	3	1	4
<b>4</b>	<b>Alcohols and Haloalkanes</b> Structure, Nomenclature, Physical Properties of Alcohols, Reaction of Alcohols	3	1	4
<b>5</b>	<b>Benzene and Its Derivatives</b> The Structure of Benzene, The Concept of Aromaticity, Nomenclature, Reactions of Benzene : Oxidation at benzylic Position, Reactions of Benzene : Electrophilic Aromatic Substitution, Aromatic Substitution, Disubstitution and Polysubstitution	3	1	4
<b>6</b>	<b>Aldehydes, Ketones and Amines</b> Structure, Nomenclature, Physical Properties, Reactions of Aldehydes and Ketones, Oxidation of Aldehydes and Ketones, Reduction of Aldehydes and Ketones, Reaction of Primary Aromatic Amines with Nitrous Acid	3	1	4
<b>7</b>	<b>Carboxylic Acids and Derivatives</b> Structure, Nomenclature, Physical Properties, Acidity, Preparation of Carboxylic Acids, Reduction, Esterification, Conversion to Acid Chlorides, Hydrolysis of Carboxylic Acid Derivatives	3	1	4
<b>8</b>	<b>Carbohydrates</b> Introduction, Monosaccharides, The Cyclic Structure of Monosaccharides, Reaction of Monosaccharides	3	1	4
<b>9</b>	<b>Amino Acids, Proteins, and Lipids</b> Introduction, Amino Acids, Reactions of Amino Acids, Isoelectric Point, Electrophoresis, Polypeptides and Proteins, Triglycerides, soaps and detergents, phospholipids	3	1	4

TOPIC	Content Outline	SLT		
		Practical	Self-study	
1	<b>Reactions of Aliphatic and Aromatic Hydrocarbons</b> Perform tests to differentiate an alkane from an alkene and an arene	2	2	
2	<b>Classification of Alcohols</b> Differentiation of alcohols based on several reactions	2	2	
3	<b>Aldehyde and Ketone</b> Identification of carbonyl compounds as aldehyde and ketone using qualitative analysis	2	2	
4	<b>Carboxylic Acid and Its Derivatives</b> Determination of the properties and reactions of carboxylic acid and its derivatives	2	2	
		Lecture	Tutorial/ Practical	Self-study
	<b>Quizzes</b>			6
	<b>Assignment</b>	0	0	10
	<b>Midterm</b>	1	0	5
	<b>Final</b>	2	0	20
	<b>Total</b>	30	17	85
18.	<b>Teaching and Learning Activities/Total Student Learning Time (SLT):</b>			
		<b>Face to Face</b>	<b>Self Learning</b>	
	<b>Lecture</b>	27	27	
	<b>Tutorial</b>	9	9	
	<b>Laboratory</b>	8	8	
	<b>Quiz (3)</b>		6	
	<b>Assignment (2)</b>		10	
	<b>Midterm Test (1)</b>	1	5	
	<b>Final (1)</b>	2	20	
	<b>Sub-total</b>	47	85	
	<b>Total SLT(hours)</b>	132		
19.	<b>Main references supporting the course:</b>			
	Brown, William H. (2005). <i>Introduction to Organic Chemistry</i> . 3 <sup>rd</sup> ed. New York: Wiley.			
	<b>Additional references supporting the course:</b>			
	Atkins, Robert C., and Carey, Francis A. (2002). <i>Organic Chemistry: A Brief Introduction</i> . 3 <sup>rd</sup> ed. New York: McGraw-Hill.			
	Bailey, Phillip S. Jr., and Bailey, Christina. (2000). <i>Organic Chemistry: A Brief Survey of Concepts and Applications</i> . 6 <sup>th</sup> ed. Upper Sadler River, NJ: Prentice Hall.			
	McMurry, John E. (2003). <i>Fundamentals of Organic Chemistry</i> . 5 <sup>th</sup> ed. Belmont, CA: Brooks/Cole.			