

Subject Description Form

Subject Code	ABCT2103
Subject Title	Cell Biology
Credit Value	3
Level	2
Pre-requisite	General Biology
Objectives	<ol style="list-style-type: none"> 1. To develop students an understanding of basic chemical components of cells; an appreciation of cellular structures and functions. 2. Upon completion, students will have acquired the basic concepts of cell biology, and built up a solid foundation for studies in the other aspects of genetics and biotechnology.
Intended Learning Outcomes	<p>On successfully completing this subject, students will be able to:</p> <ol style="list-style-type: none"> a. describe the structural organization of eukaryotic cells, including an introduction to the major types of subcellular organelles, their structures and functions. b. relate the properties and functions of plasma membrane to its architecture. c. explain the phenomena that are essential to cellular activities: energy transformations and the use of enzymes to catalyze chemical reactions. d. integrate the working principles of different types of microscopy commonly used in cell biology and be able to apply the techniques in different situations. e. identify different signaling molecules involved in controlling a eukaryotic cell cycle.
Subject Synopsis/ Indicative Syllabus	<p><u>Introduction to cells and Chemistry of Cells</u> Importance of biomolecules in cells, bioenergetics and catalysis. Visualization of cells and subcellular structures with different types of microscopy.</p> <p><u>Cells and Development</u> Differentiation of cells during embryonic development. Cell types and functions.</p> <p><u>Structure and Function of Cell Organelles</u> The architecture of plasma membrane, transport across membrane, internal membranes and cell energetic; cytoskeleton and cell movement; endoplasmic reticulum, ribosomes, Golgi apparatus, mitochondrion, and the nucleus.</p> <p><u>Control of Cell Growth and Cell Death in Eukaryotes</u> Different phases of cell cycle and its regulations; mechanisms of cell death.</p> <p><u>Control of cell signaling</u> Types of cell signaling. Basis and understanding of cell signaling, major types of signaling cascades.</p>

Teaching/Learning Methodology	<p><u>Lectures</u> Acquire general and basic understandings and concepts of the subject using an interactive approach.</p> <p><u>Tutorials</u> Provide informal sessions for discussion on various subject materials, using exercises and case studies.</p> <p><u>Practical lab</u> Students would learn important experimental techniques and be trained to develop their ability in designing experiments, data interpretation and report writing.</p> <p><u>Self-study</u> Students will be given a reading list for their own self-study. Reading list will be extracted from the recommended textbooks.</p>																																																																			
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" data-bbox="516 667 1399 1136"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> <th rowspan="2"></th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td>1. Examination</td> <td>50</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>2. Quiz 1</td> <td>15</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>3. Quiz 2</td> <td>20</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>4. Lab report</td> <td>10</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. Attendance</td> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="5"></td> <td></td> </tr> </tbody> </table> <p>Assessments will consist of laboratory report write-ups and quizzes. These assessments are in line with the content of the interactive lectures and tutorials. Examination is focused on analytical skills and problem solving skills in cell biology.</p> <p>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 ABCT3109.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e	1. Examination	50	√	√	√	√	√		2. Quiz 1	15	√	√	√	√	√		3. Quiz 2	20	√	√	√	√	√		4. Lab report	10	√	√	√				5. Attendance	5							Total	100%						
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Student Study Effort Expected	<p>Class contact:</p> <ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial ▪ Practical Lab <p>Other student study effort:</p> <ul style="list-style-type: none"> ▪ Assignments ▪ Self Study <p>Total student study effort:</p>						<p>22 Hrs</p> <p>11 Hrs</p> <p>6 Hrs</p> <p>54 Hrs</p> <p>20 Hrs</p> <p>113 Hrs</p>																																																													

**Reading List and
References**

The World of the Cell (6th Ed) –
Becker W.M., Kleinsmith, L.J. & Hardin, J. Pearson/Benjamin/Cummings 2005
Int. Ed.
Essential Cell Biology (2nd Ed) –
Alberts, B. et al. – Garland 2003