

## Subject Description Form

<b>Subject Code</b>	ABCT4106
<b>Subject Title</b>	Pharmacology of Drug Therapy
<b>Credit Value</b>	3
<b>Level</b>	4
<b>Pre-requisite</b>	Human physiology/Cell Biology , Biochemistry
<b>Objectives</b>	The subject is designed to provide students majored in Applied Biology with Biotechnology a strong foundation in pharmacologic principles of drugs and therapy. It equips students with problem solving skills, analytical skills and conceptual framework to discuss issues from pharmacologic, therapeutic and toxicological perspectives associated with biotechnology. Studying this subject will facilitate students to further develop their careers in many areas related with biotech and biopharmaceuticals. In addition, it will help develop students' critical thinking for their personal development.
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a. Understand and analyze pharmacological issues with an insight of the basic principles on the mechanisms of action and the fate of drug inside the body.</li> <li>b. Understand the major drug families and the therapy of selected diseases.</li> <li>c. Evaluate the therapeutic and toxic effects of drugs with suitable methodology of pharmacology, and toxicology.</li> <li>d. Apply pharmacological and toxicological knowledge to analyze practical examples and to solve problems in biotech and biopharmaceuticals related areas.</li> <li>e. Develop analytical, critical thinking, oral and written communication skills.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b>Basic principles of Pharmacology:</b></p> <ul style="list-style-type: none"> <li>- History of pharmacology and its relationship with biotech disciplines.</li> <li>- Definition, nature and sources of drugs, drug nomenclature.</li> <li>- Effects of drugs on the body---pharmacodynamics</li> <li>- Effects of the body on drugs---pharmacokinetics</li> <li>- Basic principles of toxicology and adverse drug reactions</li> <li>- Adverse drug effects in the geriatric population</li> <li>- Research and development of new drugs including biologic products.</li> <li>- Drug regulation and legislation.</li> </ul> <p><b>Pharmacology of the autonomic and central nervous systems:</b></p> <ul style="list-style-type: none"> <li>- Basic principles of neural transmission.</li> <li>- Drugs affecting the autonomic nervous system.</li> <li>- Drugs affecting the central nervous system.</li> <li>- Drugs for neurological and psychiatric disorders.</li> </ul> <p><b>Drugs affecting major organ system:</b></p> <ul style="list-style-type: none"> <li>- Basic principles and drugs for cardiovascular disorders</li> <li>- Basic principles and drugs for disorders in endocrine system.</li> </ul>

	<ul style="list-style-type: none"> <li>- Basic principles and drugs for antimicrobial/antiviral chemotherapy.</li> <li>- Basic principles and drugs for cancer chemotherapy.</li> </ul> <p><b>Basic principles of toxicology and risk assessment:</b></p> <ul style="list-style-type: none"> <li>- Spectrum of undesirable effects.</li> <li>- Classification and mechanisms of major toxic agents including carcinogens and teratogens.</li> <li>- Chemical residues and natural contaminants.</li> <li>- Basic principles in the treatment of poisoning.</li> <li>- Basic evaluation and tests of drug toxicity in animals.</li> <li>- Determination of LD50, TD50 and therapeutic index.</li> </ul>																																														
<p><b>Teaching/Learning Methodology</b></p>	<p><b>Interactive lectures</b> are used to provide general outlines of key concepts of the subject and to guidance on further applications and readings. Each interactive lecture has several sessions of short lectures to provide basic theoretical framework to students. After each short lecture, in-class activities (case studies, group discussion, etc) focusing on high order thinking are used to enhance students' learning and knowledge.</p> <p><b>Tutorials</b> are designed to provide the environment for discussions on the subject materials. In-depth exercises and case studies are held in the tutorials to consolidate and integrate their knowledge.</p> <p><b>Laboratories</b> allow students to acquire actual skills on experimental techniques, experimental design, data interpretation and report writing. The content of the laboratories also is in line with the interactive lectures. Thus, students could develop the skills and ability of linking theory and practice.</p>																																														
<p><b>Assessment Methods in Alignment with Intended Learning Outcomes</b></p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1.Quiz</td> <td>30</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2.Examination</td> <td>50</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3.Laboratory</td> <td>20</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>A variety of assessment tools will be used, including quizzes, assignments, and reports to develop students' analytical skills, critical thinking and communication skills. Writing skills will be assessed in all the assessment methods. The continuous assessment methods are based upon several of individual and group-based activities, which include mid-term/quiz and laboratories. They allow students to see the link between theory and practice. Examination and home project are focused on analytical and problem solving skills to solve pharmacology problems in particular.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1.Quiz	30	✓	✓	✓	✓	✓		2.Examination	50	✓	✓	✓	✓	✓		3.Laboratory	20	✓	✓	✓	✓	✓		Total	100 %						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed (Please tick as appropriate)																																											
		a	b	c	d	e																																									
1.Quiz	30	✓	✓	✓	✓	✓																																									
2.Examination	50	✓	✓	✓	✓	✓																																									
3.Laboratory	20	✓	✓	✓	✓	✓																																									
Total	100 %																																														

<b>Student Study Effort Expected</b>	Class contact:	
	▪ Lecture	26Hrs.
	▪ Tutorials	13Hrs.
	▪ Laboratories	9Hrs.
	Other student study effort:	
	▪ Preparation for quiz and laboratory session	20Hrs.
	▪ Self study	52Hrs
	Total student study effort	120Hrs
<b>Reading List and References</b>	<p><u>Essential</u></p> <ol style="list-style-type: none"> <li>1. Rang, H.P. Dale, M.M. Ritter, J.M. <i>Pharmacology 7<sup>th</sup> Edition Churchill Livingstone, 2011</i></li> <li>2. Richard D Howland, Pamela C. Champe. <i>Lippincott's Illustrated Reviews: Pharmacology. 4<sup>th</sup> Edition. Lippincott Williams &amp; Wilkins, 2009</i></li> </ol> <p><u>Supplementary</u></p> <ol style="list-style-type: none"> <li>1. Katzung, B.G. <i>Basic &amp; Clinical Pharmacology 11<sup>th</sup> Edition McGraw-Hill Medical, 2009</i></li> <li>2. Stringer, J.L. <i>Basic Concepts in Pharmacology 3<sup>rd</sup> Edition McGraw-Hill, 2006</i></li> <li>3. Hardman JG, Limbird LE, Gilman AG. <i>Goodman &amp; Gilman's The Pharmacological Basis of Therapeutics. 11<sup>th</sup> Edition. New York: McGraw-Hill, 2006.</i></li> <li>4. Lu, F.C., Sam Kacew. <i>Basic Toxicology: Fundamentals, Target, Organs and Risk Assessment 5<sup>th</sup> Edition Informa Healthcare 2009</i></li> </ol> <p><u>Recommended Academic Journals</u></p> <ol style="list-style-type: none"> <li>1. <i>Annual Review of Pharmacology and Toxicology</i></li> <li>2. <i>Trends in pharmacological science</i></li> </ol>	