Subject Description Form

Subject Code	ABCT2134
Subject Title	Microbiology
Credit Value	3
Level	2
Pre-requisite	General Biology
Objectives	To enable students to understand the principles of taxonomy, physiology and control of microorganisms. Students will become familiar with the basic microbiological techniques and the significance of the different groups of microorganisms, including bacteria, fungi and viruses
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) discuss the development of microbiology from early times until today and its contribution to improve science and the quality of life (b) explain the basic microbiological techniques (c) explain microbial cell structure and function, microbial taxonomy and diversity (d) discuss and differentiate the importance of bacteriophages, animal and plant viruses (e) appreciate the diversity of fungi (f) describe microbial metabolism and growth (g) describe the chemical and physical methods of microbial control (h) identify microbes through the use of cultures and staining techniques
Subject Synopsis/ Indicative Syllabus	Topic — Hour **Introduction** — 2 ♦ Historical development ♦ Importance of different groups of microorganisms ♦ Areas of study in microbiology **Basic microbiological techniques** — 8 **Bacteria** — 11 ♦ Cell structure and function ♦ Microbial taxonomy ♦ Prokaryotic diversity **Viruses** — 6 ♦ Classification and characterization of bacteriophages ♦ Animal and plant viruses **Fungi and Protists** — 4 ♦ Characteristics, classification and identification **Metabolic diversity of microorganisms** — 7 ♦ The various source of energy for microbial metabolism

	• The various metabolic pathways specific to microorganisms **Microbial nutrition, cultivation and growth** 8 • The chemical and physical conditions for microbial growth • Principles and methods for cultivation of various types of microorganisms • Kinetics and mathematical model of microbial growth • Methods of measuring growth **Control of microorganisms** 4 • Physical and chemical agents • Evaluation of antimicrobial agent effectiveness **Total 50**
Teaching/Learning Methodology	The core information in different topics will be presented and explained to students in lectures. In tutorials, active participation is encouraged, key topics will be reviewed and related topics will be discussed to enhance their interest. Quizzes will be used to assess the students' knowledge and understanding of the subject expected from the learning outcomes.
Assessment Methods in Alignment with Intended Learning Outcomes	

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)								
		a	b	c	d	e	f	g	h	
1. Lecture-Examination	50	X	X	X	X	X	X	X	X	
2. Lecture-Continuous assessment	45	X	X	X	X	X	X	X	X	
3. Attendance	5	X	X	X	X	X	X	X	X	
Total	100 %									

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 ABCT3111.

Student Study Effort Expected		
	Class contact:	
	▪ Lecture ▪ Tutorial	26Hrs. 13Hrs.
	Other student study effort:	
	▪ Report writing ▪ Self study	18 Hrs. 61 Hrs.
	Total student study effort	118 Hrs.

Reading List and References	Textbook: Prescott, L.M.; Harley, J.P. and Klein, D.A. Microbiology, 8th edition, McGraw Hill, 2010. Reference: Madigan, M.T. Brock Biology of Microorganisms, 12/E, Benjamin Cummings, 2008