Subject Description Form

Subject Code	ABCT2001
Subject Title	Lab Techniques in Biological Sciences
Credit Value	1
Level	2
Pre-requisite	General Laboratory Techniques and Safety
Co-requisite	ABCT2101 Biochemistry
Objectives	The aim of this module is to apply the fundamental principles and techniques introduced in microbiology and biochemistry through experimentation.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. deploy the knowledge learned for exploring the basic principles of taxonomy, physiology and control of microorganisms, common biomolecules such as carbohydrates, lipids, amino acids and enzymes through experimentation. b. Apply the basic microbial and biochemical techniques to conduct experiments as well as to critically evaluate, analyze and interpret experimental results c. function effectively in team work d. integrate methods, skills and techniques for solving microbial and biochemical related problems e. perform good health and safety practices in the laboratory
Subject Synopsis/ Indicative Syllabus	Experiments involved may included 1. use of the microscope and proper aseptic laboratory techniques 2. identify microbes through the use of cultures and staining techniques 3. apply the basic biochemical techniques on enzyme characterization and metabolite assays 4. interpret and analyze biochemical data. e.g. develop analytical, critical thinking, and written communication skills
Teaching/Learning Methodology	Experiments will be carried out by students to explore and apply what they learned in lecture sessions. Students work together in teams using basic microbial and biochemical techniques, operating various instruments, and running software packages to solve problems on topics discussed as well as presenting their experimental results. Report writing is required for individual students to scrutinize their analytical, problem solving, communication, judgement and other skills.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes tobe assessed (Please tick as appropriate)					
		a	b	c	d	e	
1. Performance and attendance	15%		✓	✓		✓	
2. Laboratory Reports	70%	✓	✓		✓		
3. Test	15%	✓	✓				
Total	100 %						

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

This is a laboratory subject and how the students perform in the laboratory would be an important aspect of assessment. In this course, technical skills and performance in the laboratory are assessed by the demonstrators and/or instructors to indicate whether the students prepared well before the laboratory session and his or her ability to conduct the experiments effectively and safely. It is also important for the students to analyze and evaluate experimental data obtained (outcome b).
Thus, students are required to submit experiments reports which included a presentation of data and analysisof the data as well as discussion which evaluate the reliability of the data, compare the results obtained from previous measurements or literature values, and discuss possible source of errors and discrepancies.

Student Study Effort Expected

Class contact:	
▪ Laboratory	21 Hrs.
Other student study effort:	
▪ Laboratory Preparation (reading manuals and related background materials)	3 Hrs.
▪ Writing Laboratory Reports	21 Hrs.
Total student study effort	45 Hrs.

Reading List and References

1. Prescott, L.M.; Harley, J.P. and Klein, D.A. Microbiology, 8th edition, McGraw Hill, 2010.
2. Madigan, M.T. Brock Biology of Microorganisms, 12/E, Benjamin Cummings, 2008
3. Nelson, D. L. and Cox, M.M. Lehninger Principles of Biochemistry, 6th Ed. Worth 2013
4. Wilson K & Walker J “Principles and Techniques of Practical Biochemistry, 5th Ed” Cambridge 2000
5. Norrell & Messley Microbiology Laboratory Manual Second Edition Pearson 2003