Module code	SB-4244		
Module Title	Laboratory Techniques in Biochemistry and Molecular Biology		
Degree/Diploma	Bachelor of Science (Biology)		
Type of Module	Major Core		
Modular Credits	4	**Total student Workload**	8 hours/week
		Contact hours	6 hours/week
Prerequisite	SB-2211 Genetics; SB-2243 Introduction to Biochemistry		
Anti-requisite	None		

Aims

The module is designed to be lab intensive in order to introduce students to the cutting-edge techniques that are routinely used in modern biochemistry and molecular biology laboratory. The module also aims to provide students with extensive hands-on training in various methodologies critical for basic research in molecular biology.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order :	10%	- Describe the various laboratory techniques in biochemistry and molecular biology
Middle order :	10%	- Conduct laboratory practicals, collect data, interpret and discuss experimental results
Higher order:	80%	- Plan and design experiments using biochemical, cell and molecular biological techniques - Work effectively in groups during laboratory practicals and independently in reporting experimental results - Master and develop competence in the various laboratory techniques - Conduct a presentation and discussion on a research article related to biochemistry and molecular biology

Module Contents

- Protein electrophoresis (SDS-PAGE)
- Chromatography and separation techniques
- Protein purification and characterization
- Centrifugation techniques - ultracentrifugation
- Immunochemical techniques – ELISA & flow cytometry
- Western blotting and immunoprecipitation
- Posttranslational modification
- Cell culture techniques (tissue culture)
- Fluorescence microscopy
- Molecular cloning techniques
- Production of recombinant proteins
- Southern and Northern blotting techniques
- The polymerase chain reaction (PCR), RT-PCR, Real-time PCR
- Site-directed mutagenesis
- DNA sequencing and analysis
- Gene delivery and transfer into mammalians cells,
- RNA interference (RNAi, siRNA)

Assessment	Formative assessment	Tutorial assignments and feedback
	Summative assessment	Examination: 0%
		Coursework: 100% - 5 practical assignments (50%) - 1 written assignment (10%) - 1 oral presentation (10%) - 3 class tests (30%)