Module code	SC-2402		
Module Title	Biomarkers, Diseases and Diagnostics		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Breadth		
Modular Credits	4	**Total student workload**	10 hours/week
		Contact hours	4 hours/week
Prerequisite	None		
Anti-requisite	None		

Aim:

To understand the importance of biomarkers in diseases and how this knowledge can lead to the development of diagnostic tools that aid in disease detection and management.

Learning Outcomes:

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

Lower order :	20%	- Recall the pathology behind various diseases and their associated biomarkers - Describe the science underpinning commonly used tests conducted for the detection of diseases (from blood, saliva, urine, swab, tissue, body fluids, etc)
Middle order :	40%	- Interpret the results of commonly employed diagnostic tools - Review new trends, emerging techniques and applications in diagnostic technology - Identify the steps involved in developing a diagnostic test and bringing it to market
Higher order:	40%	- Evaluate recent advances and developments in biomedical diagnostics - Appraise the challenges that remain in biomedical diagnostics - Evaluate the disparities in disease detection and management from the developed and developing worlds

Module Contents

- Protein and non-protein biomarkers (such as microRNAs and exosomes) in non-communicable diseases such as cancer and neurodegenerative diseases
- Protein and non-protein biomarkers (such as cytokines and metabolites) in communicable diseases such as tuberculosis and Zika virus
- Nucleic acid diagnostics, including amplification techniques and trends in detection of nucleic acids
- Immunodiagnostics, including standard and calibration of labelled and unlabelled assays
- Personalised diagnostics, including micro- and nano-biosensors, smartphone and wearable sensors
- From R&D to commercialisation of lab-based and point-of-care diagnostics, including validation, quality control and commercialisation

Assessment	Formative assessment	Tutorials and Feedback
	Summative assessment	Examination: 40%
		Coursework: 60% -2 Individual essays (30%) -1 Group Poster Presentation (30%)