

HIGHER NITEC IN TECHNOLOGY – BIO-CHEMICAL TECHNOLOGY

Course Code: HT2BC / Plan Code: HT2BC

COURSE OBJECTIVE

This course equips students with skills and knowledge to carry out prescribed procedures and techniques required for sample processing and analyses applicable to the biotechnology, chemical, pharmaceutical, petrochemical, polymer, food, environmental and healthcare industries.

COURSE STRUCTURE

Core/Specialisation Modules

S/N	Module Details	Module Code	Module Objectives
MSC: Basic Chemistry			
C1	Introductory Chemistry 33 (T) 27 (P) Credits 3 Prerequisite: Nil	LS43001FP	On completion of the module, students should be able to perform manual titration, as well as identify the common elements of organic molecules, nomenclature used, chemical structure and bonding, common functional groups, and the properties associated with the various functional groups of organic compounds.
		Equivalent Code LS4006FP	
C2	Analytical Chemistry 33 (T) 27 (P) Credits 3 Prerequisite: Nil	LS43002FP	On completion of the module, students should be able to perform measurement of pH and physical properties as well as various separation techniques for analysis using equipment.
		Equivalent Code LS4007FP	
MSC: Sampling & Statistics			
C3	Laboratory Mathematics & Data Analysis 45 (T) 15 (P) Credits 3 Prerequisite: Nil	LS43003FP	On completion of the module, students should be able to apply the various mathematical principles such as numbers, exponential and logarithms function and graphs construction for laboratory operations and analysis. They should also be able to collate data, prepare graphical display and perform statistical analysis using common software programme.
		Equivalent Code LS4008FP	
C4	Sample Handling & Processing 33 (T) 27 (P) Credits 3 Prerequisite: Nil	LS43005FP	On completion of the module, students should be able to understand sampling plans, perform sampling, apply proper preservation techniques and carry out sample analysis.
		Equivalent Code LS4010FP	
MSC: Microbiology & Molecular Biology			
C5	General Microbiology 33 (T) 27 (P) Credits 3 Prerequisite: Nil	LS43004FP	On completion of the module, students should be able to safely cultivate and stain microorganisms using aseptic techniques, perform microscopic observation of microorganisms and determine the concentration of cells in samples using common enumeration techniques.
		Equivalent Code LS4009FP	
C6	Essential Biochemistry 33 (T) 27 (P) Credits 3 Prerequisite: Advised to complete General Microbiology module	LS43006FP	On completion of the module, students should be able to perform analysis of biological compounds using various biochemical and spectrophotometric techniques as well as perform post-analysis interpretation of test results.
		Equivalent Code LS5009FP	

S/N	Module Details	Module Code	Module Objectives
C7	Molecular Bioscience 33 (T) 27 (P) Credits 3 Prerequisite: Advised to complete General Microbiology module	LS53004FP	On completion of the module, students should be able to perform various laboratory detection and diagnostic tests of biomolecules/microorganisms for diagnostic/ identification purposes. They will also be able to classify and manage biological mixed waste.
		Equivalent Code LS5010FP	
MSC: Instrumental Techniques			
C8	Spectroscopy Techniques 33 (T) 27 (P) Credits 3 Prerequisite: Advised to complete Introductory Chemistry module	LS53001FP	On completion of the module, students should be able to perform various modes of spectroscopy, which include infrared spectrometry, atomic spectrometry, and the applications of inductive-coupled plasma instrument. They will also be able to troubleshoot and maintain spectroscopic instruments.
		Equivalent Code LS5012FP	
C9	Liquid Chromatography Techniques 33 (T) 27 (P) Credits 3 Prerequisite: Advised to complete Introductory Chemistry module	LS53002FP	On completion of the module, students should be able to perform chemical analysis with different types of High Performance Liquid Chromatography (HPLC) instruments, such as Reversed Phase HPLC, Ion Chromatography (IC), and Liquid Chromatography-Mass Spectrometry (LCMS). They will also be able to troubleshoot and conduct basic routine maintenance for liquid chromatographic instruments.
		Equivalent Code LS5013FP	
C10	Gas Chromatography Techniques 33 (T) 27 (P) Credits 3 Prerequisite: Advised to complete Introductory Chemistry module	LS53003FP	On completion of the module, students should be able to perform chemical analysis with different types of Gas Chromatography (GC) instruments such as GC- Flame Ionization Detector (FID), GC- Thermal Conductivity Detector (TCD) and GC-Mass Spectrometry (GCMS). They will also be able to troubleshoot and conduct basic routine maintenance for gas chromatographic instruments.
		Equivalent Code LS5013FP	

Abbreviations: T - Theory, P - Practical, MSC - Modular Skills Certificate

CREDITS FOR CERTIFICATION

Total of 30 credits from successful completion of 10 Core/Specialisation modules.

Applicants who do not meet the entry requirements for Core/Specialisation modules will need to complete 12 credits from 4 Foundation modules before taking Core/Specialisation modules.

Foundation Modules

S/N	Module Details	Module Code	Module Objectives
F1	Basic Laboratory Techniques 33 (T) 27 (P) Credits 3 Prerequisite: Nil	AS33001FP	On completion of the module, students should be able to adhere to laboratory safety, maintain the quality standards of chemical laboratory, perform basic laboratory techniques, carry out basic calibration and organise laboratory data.
		Equivalent Code LS4005FP	
F2	Occupational Health & Safety 33 (T) 27 (P) Credits 3 Prerequisite: Nil	AS33002FP	On completion of the module, students should be able to perform workplace housekeeping and maintain workplace safety, which includes process safety, handle hazardous materials, perform biohazard waste management as well as participate in risk assessment.
		Equivalent Code Nil	

S/N	Module Details	Module Code	Module Objectives
F3	Applied Science Fundamentals 33 (T) 27 (P) Credits 3 Prerequisite: Nil	AS33003FP	On completion of the module, students should be able to identify common elements of organic and inorganic molecules, nomenclature used, chemical structure and bonding, common functional groups as well as the properties associated with the various functional groups. Students should also be able to perform basic measurements, prepare stock solution and do simple dilution in the laboratory.
		Equivalent Code Nil	
F4	Basic Mathematics 45 (T) 15 (P) Credits 3 Prerequisite: Nil	AS33004FP	On completion of the module, students should be able to apply the various mathematical principles such as algebra, perform unit conversion and construct graphs for laboratory data expression and analysis. In addition, they should be able to collate data and perform basic functions using common software programme.
		Equivalent Code Nil	

Abbreviations: T - Theory, P - Practical

VENUE

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Note:

- 1) The training schedule of lessons is subject to change.
- 2) Depending on the demand, not all the modules in the CET *Higher Nitec* in Technology courses will be offered in each intake. Where the modules are offered and there is insufficient enrolment, the classes will be cancelled and a full refund will be given to the affected students.