Module code	SC-4363			
Module Title	Modern Analytical Techniques			
Degree/Diploma	Bachelor of Science (Chemistry)			
Type of Module	Major Option			
Modular Credits	2	Total student Workload	4	hours/week
		Contact hours	2	hours/week
Prerequisite	None			
Anti-requisite	None			

Aims

Modern trends of electro-optical analysis, sample separation and extraction, integrated bioanalytical approaches will also be discussed using multiple resources like books, journals etc.

Learning Outcomes

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

Lower order:	50%	- Understand the basic principle of multiple analysis platform - Understand the theory and application of different sample preparation, extraction and processing methods
Middle order:	30%	- Identifying information which may lead to the resolution of the problem. - Investigating critical components of assay/protocol development
Higher order:	20%	- Encouraging student-centred pedagogy through open-ended problem solving and Innovate parallel analytical tool development

Module Contents

-*Current trends in electrochemical and optical analysis:* Voltammetry; Chemically-modified electrodes (CME); Self-assembled monolayers (SAM), Spectroelectrochemistry, Proteins and their sensitivity, Specificity and detection limits. Electrochemiluminescence (ECL) and Surface Plasmon resonance (SPR

-*Modern separation and extraction techniques:* Capillary electrophoresis (CE), Field flow fractionation (FFF), Supercritical fluid chromatography (SFC) and extraction.

-*Modern trends in sampling and automation:* Sample processing and pre-treatment; Food (Raw and processed); Biospecimens i.e. blood, cell, urine, saliva, tissue, bacteria, virus, Toxin and heavy metals etc.

-*Bio-analytical performances of Point of care (POC) devices:* Lab-on-a-chip and microfluidics, Micro-total analysis system, DNA and Protein microarray, DNA/RNA amplification (PCR, RT-PCR).

Assessment	Formative assessment	Tutorial and feedback
	Summative assessment	Examination: 60%
		Coursework: 40% - 2 written assignments (20%) - 2 class tests (20%)