

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 <i>On successful completion of this module, a student will be expected to be able to:</i>			
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 - <i>Current trends in electrochemical and optical analysis:</i> 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) - <i>Modern separation and extraction techniques:</i> Capillary electrophoresis (CE), Field flow fractionation (FFF), Supercritical fluid chromatography (SFC) and extraction. - <i>Modern trends in sampling and automation:</i> Sample processing and pre-treatment; Food (Raw and processed); Biospecimens i.e. blood, cell, urine, saliva, tissue, bacteria, virus, Toxin and heavy metals etc. - <i>Bio-analytical performances of Point of care (POC) devices:</i> 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%)	