

Module code	SC-1241		
Module Title	Fundamentals of Physical Chemistry		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Major Core		
Modular Credits	4	Total student Workload	10 hours/week
		Contact hours	4 hours/week
Prerequisite	None		
Anti-requisite	TG-1203 Fundamentals of Physical Chemistry for Engineers		
Aims			
The aim of this module is to introduce students to the fundamentals areas of Physical Chemistry: units, quantities and conversions; kinetic theory of gases; thermodynamics and equilibria; electrochemistry; basic practical skills; laboratory report writing.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	30%	- derive SI units for physicochemical quantities; understand 'extent of reaction', chemical thermodynamics and equilibria	
Middle order :	60%	- assess physical units and manipulation, order-of-magnitude estimation; use balanced chemical equations to make stoichiometric calculations; use thermodynamics to explain, predict and calculate energy changes of physico-chemical processes; explain aspects of titration curves and calculate pH for different solution mixtures	
Higher order:	10%	- interpret data from experiment and present results of analyses in a report in a concise manner; independent thought and interpretation	
Module Contents			
<ul style="list-style-type: none"> - <i>Units and dimensions</i>: Physical quantities; SI and derived units; chemical calculations. - <i>Stoichiometry</i>: Balancing chemical equations; calculations based on reaction stoichiometry; extent of reaction; limiting reagents. - <i>Thermodynamics</i>: First law, systems and processes; work; heat; state and path functions; calculations of mechanical work, heat, enthalpy and internal energy of chemical systems. - <i>Equilibria</i>: Dynamic equilibrium; equilibrium constant; reaction quotient; <i>Le Chatelier's</i> principle; industrial applications; acid-base theories; pH scale; titrations; indicators and buffer solutions; common ion effect; solubility equilibria; electrochemical equilibria. 			
Assessment	Formative assessment	Tutorial and feedback	
	Summative assessment	Examination: 60% Coursework: 40% - 1 written assignment (5%) - 3 class tests (15%) - 3 practical reports (20%)	