

Module code	SC-4348		
Module Title	Statistical Thermodynamics and Reaction Kinetics		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Option		
Modular Credits	2	Total student Workload	4 hours/week
		Contact hours	2 hours/week
Prerequisite	None		
Anti-requisite	None		
Aims			
The module is designed for students to understand the fundamental concepts of statistical thermodynamics, intermolecular forces, and kinetic theory.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order:	40%	- understand the fundamental concepts of statistical thermodynamics. - understand the statistical interpretation of entropy.	
Middle order:	40%	- analyse thermodynamic probability, energy states and energy levels, distribution functions, intermolecular forces, transport phenomena, diffusion, equation of state of an ideal gas, and specific heat capacity.	
Higher order:	20%	- analyse a certain topic independently, present the results of analyses in a concise manner, and work collaboratively in a team in solving chemical problems.	
Module Contents			
<ul style="list-style-type: none"> - Concepts and current trends of statistical thermodynamics Energy states and energy levels; thermodynamic probability; classical statistics and distribution functions, statistical interpretation of entropy. - Intermolecular forces and transport phenomena Intermolecular forces; the van de Waals equation of state; thermal conductivity; diffusion - Kinetic theory Equation of state of an ideal gas; the principle of equipartition of energy; classical theory of specific heat capacity; applications of statistics to gases; the monoatomic ideal gas; specific heat capacity of a diatomic gas. 			
Assessment	Formative assessment	Tutorial and feedback	
	Summative assessment	Examination: 60% Coursework: 40% - 2 class tests (20%) - 2 written assignments (20%)	