

Module code	SC-4328		
Module Title	Selected Topics in Advanced Spectroscopy		
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			
The aim of this module is to provide students with an understanding of modern advanced spectroscopy applied to unravelling structural information about a molecule and to understand modern spectroscopic microscopy.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order:	40%	<ul style="list-style-type: none"> - understand the principles of an NMR spectrometer - understand a Fermion and a Boson particle and their nuclear spin. - understand spin multiplicity and J-coupling. 	
Middle order:	40%	<ul style="list-style-type: none"> - describe the nuclear Overhauser effect and its application to structural determination in 1D-NMR - describe the basic principle of 2D-NMR based upon J-coupling and NOE. - describe stereochemistry of a molecule based upon a 2D NOESY spectrum. 	
Higher order:	20%	<ul style="list-style-type: none"> - analyse the energy state diagram for the NOE experiment. - analyse a certain topic independently and collaboratively in a team. 	
Module Contents			
The main contents of the module are:			
<ul style="list-style-type: none"> – Bosons Fermions and nuclear spin – 1-D NMR spectra and spectral splitting – The nuclear Overhauser effect – 2D-NMR, NOESY and COSY for a particle in a potential well, linking to electronic spectra. – Optics, lasers, and microscopy 			
Assessment	Formative assessment	Tutorial and feedback	
	Summative assessment	Examination: 60% Coursework: 40% <ul style="list-style-type: none"> - 2 written assignments (20%) - 2 class test (20%) 	