

Module code	SC-4318		
Module Title	Nuclear Chemistry and f-block elements		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Major Option		
Modular Credits	2	Total student Workload	5 hours/week
		Contact hours	2 hours/week
Prerequisite	SC-1211 Fundamentals of Inorganic Chemistry SC-2212 Transition Metal Chemistry		
Antirequisite	None		
Aims			
This module is designed for students to gain an understanding of nuclear reactions and their role in the chemical sciences, with a particular emphasis on f-block elements.			
Learning Outcomes			
On successful completion of this module, a student will be expected to be able to:			
Lower order:	40%	<ul style="list-style-type: none"> - Understand the nuclear properties and reactions involving the nucleus and the transformation of the nucleus that leads to it being radioactive - Recognise the two series of f-block elements, their physical and chemical properties - Assess the differences between f-block and d-block chemistry 	
Middle order:	40%	<ul style="list-style-type: none"> - Research literature and organise information coherently 	
Higher order:	20%	<ul style="list-style-type: none"> - Communicate and work-cooperatively in a group/team - Presentation skills 	
Module Contents			
<ul style="list-style-type: none"> - Nuclear theory Radioactive decay, nuclear stability and mass-energy relationships Interaction of radiation with matter, detection methods Nuclear reactors, neutron activation analysis Applications of radioactivity, nuclear medicine, dating techniques - f-block elements Lanthanides and actinides – abundance and distribution General properties including oxidation states, electronic configurations Magnetic and spectral properties Extraction and separation of lanthanides and actinides Coordination chemistry of f-block 			
Assessment	Formative assessment	Tutorial and feedback	
	Summative assessment	Examination: 60% Coursework: 40% <ul style="list-style-type: none"> - 2 written assignments (20%) - 2 class tests (20%) 	