

<b>Module code</b>	SC- 4317		
<b>Module Title</b>	Bio-Inorganic Chemistry		
<b>Degree/Diploma</b>	Bachelor of Science (Chemistry)		
<b>Type of Module</b>	Major Option		
<b>Modular Credits</b>	2	<b>Total student Workload</b>	4 hours/week
		<b>Contact hours</b>	2 hours/week
<b>Prerequisite</b>	SC-1211 Fundamentals of Inorganic Chemistry		
<b>Anti-requisite</b>	None		
<b>Aims</b>			
<p>This module is designed for students to learn the important role of metal ions in key biological processes or functions performed at cellular levels such as in the activation sites of proteins and enzymes. It also covers a brief overview of how man-made metal complexes are introduced into human biology as diagnostic probes and drugs; and the spectroscopy methods that scientists use in the study of active metal centres in biological molecules in proteins.</p>			
<b>Learning Outcomes</b>			
<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"> <li>- understand the critical biological processes that require metal ions such as respiration, metabolism, photosynthesis and muscle contractions</li> <li>- study of the ways in which toxicities are overcome by natural systems and by human intervention</li> <li>- understand how man-made metal complexes have been introduced into human biology as diagnostic probes and drugs</li> </ul>	
Middle order:	40%	<ul style="list-style-type: none"> <li>- identify metals that are biologically essential or toxic</li> <li>- describe biological functions of the main group and transition metal elements</li> <li>- interpret mechanism of reaction and discuss the coordination environment of metals in protein</li> </ul>	
Higher order:	20%	- working independently and cooperatively, presentation.	
<b>Module Contents</b>			
<ul style="list-style-type: none"> <li>- description of the basic cell structure</li> <li>- identification of metals that are biologically essential or toxic</li> <li>- biological functions of the main group and transition metal elements</li> <li>- principles of coordination chemistry related to biological inorganic chemistry</li> <li>- Physical methods applied in Bioinorganic chemistry</li> <li>- Different chemical mechanisms involved in removing toxicities by natural systems and by human intervention.</li> <li>- Oxygen transport and storage metalloproteins</li> <li>- Electron transport proteins</li> <li>- Metals in medicine and metals in drugs such as cisplatin, anti-arthritis drugs, MRI contrast agent</li> </ul>			
<b>Assessment</b>	Formative assessment	Tutorial and feedback.	
	Summative assessment	Examination: 60% Coursework: 40% <ul style="list-style-type: none"> <li>- 1 oral presentation (10%)</li> <li>- 1 written assignment (10%)</li> <li>- 2 class tests (20%)</li> </ul>	