

1.	Title of the Course	Bioinorganic and Environmental Chemistry
2.	Course Number	CY5208
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Chemistry
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To introduce and to analyze the role of inorganic elements in biological systems, in medicine and in environment. This subject will help humanity and environment uniquely.	
12.	Course Content: Role of metal ions in biology and medicine; A quick refresh of coordination chemistry, bio-molecules, spectral and biochemical techniques; Alkali and alkaline earth Ion transport by ATPases; Vanadium haloperoxidases; Manganese cluster in photosystem-II; Iron proteins & Enzymes: transport and storage, oxygenases phosphatases reductases; Environmental detoxification of organic compounds; Cobalamin (Vitamin B12) based enzymes; Nickel enzymes and their role in environment: urease, hydrogenases, carbonmonooxide dehydrogenases; Copper enzymes: electron transport; Oxidases of different types; Superoxide dismutase; Zinc: hydrolases, peptidases lyases, ligages, oxido-reductases; Molybdenum: nitrogenase oxido-reductases; Mercury reductase, detoxification of mercury in the environment.	
13.	Text book(s): 1. Lippard S J, and Berg J M, <i>Principles of Bioinorganic Chemistry</i> , University Science Publications (1994). 2. Watkinson M, <i>Bioinorganic Chemistry: The Biological Chemistry of Transition Metals</i> , John Wiley & Sons (2009).	
14.	Reference(s): 1. Bertini I, Gray H B, Lippard S J and Valentine J S, <i>Bioinorganic Chemistry</i> , University Science Book, South Asian Edition Reprint (2004). 2. Bertini I, Sigel A and Sigel H, <i>Handbook on Metalloproteins</i> , CRC Press (2001). 3. Cowan J A, <i>Inorganic Biochemistry: An Introduction</i> , VCH Publishing (1993). 4. Trautwein A, <i>Bioinorganic Chemistry: Transition Metals in Biology and their Coordination Chemistry</i> , Deutsche Forschungsgemeinschaft (1997).	