



# BIOINORGANIC CHEMISTRY

**PROF. S. P. RATH**

Department of Chemistry and Biochemistry  
IIT Kanpur

**TYPE OF COURSE** : Rerun I Elective | UG/PG

**COURSE DURATION** : 4 weeks (24 Jan'22 - 18 Feb'22)

**EXAM DATE** : 27 Mar 2022

**PRE-REQUISITES** : Should have good knowledge on coordination chemistry

**INTENDED AUDIENCE** : UG and PG students of Chemistry

**COURSE OUTLINE :**

The field of Bioinorganic Chemistry has grown significantly in recent years and lies at a natural juncture between chemistry, biology, and medicine. This rapidly expanding field probes fascinating questions about the uses of metal ions in nature. This short course will give a brief overview on some selected topics from this highly interdisciplinary subject and will provide some various applications of inorganic molecules on the life-related processes.

**ABOUT INSTRUCTOR :**

Prof. S. P. Rath received his PhD in Inorganic Chemistry from Indian Association for the Cultivation of Science (IACS), Kolkata and carried out post-doctoral research at the University of California, Davis. He then joined the Department of Chemistry at the Indian Institute of Technology Kanpur (IIT Kanpur) in 2004. He is the recipient of several awards and honours including P. K. Kelkar Research Fellowship for young faculty (2009-12), Alexander von Humboldt Fellowship for Experienced Researcher (2012), Chemical Research Society of India (CRSI) Bronze medal (2015) and C. N. R. Rao National Prize in Chemical Sciences (2018). He is presently J. N. Gupta & M. Gupta Chair Professor of Chemistry at IIT Kanpur and also elected fellows of West Bengal Academy of Science & Technology (2017) and National Academy of Sciences, India (2017). He has taught a variety of UG and PG courses at IIT Kanpur and also has received commendations multiple times from the Director, IIT Kanpur for excellence in teaching as "Outstanding Instructor". His research is in the fields of Physical-Inorganic and Bioinorganic Chemistry with special emphasis on the structure-function correlation utilizing a wide variety of synthetic and spectroscopic methods combined with DFT calculations. He has guided 15 PhD students and has over 110 publications in peer reviewed high-impact journals

**COURSE PLAN :**

**Week 1** : Bio-inorganic chemistry: general introduction and prospects Metals in biology: Nature selection

**Week 2** : Design principles used in chemical biology ; some noteworthy examples

**Week 3** : Life with oxygen

**Week 4**: Metals in medicine