UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Bioinorganic Chemistry

2324-1-F5401Q023

Aims

The aim of the course is to illustrate properties, structures, reactivity, biological functions and methods of characterization of compounds of bioinorganic relevance.

Contents

Introduction to bioinorganic chemistry

Physical and spectroscopic methods for the characterization and study of bioinorganic systems
Fundamentals of electron transfer theory (Marcus theory and quantum tunneling);
Structure and function of metal proteins for electron transfer
Electron transport: the case of cytochrome c oxidase
Photosynthesis and PSII
Detoxification and activation of O2
Role of metals in diseases: the case of copper in neurodegenerative diseases
Activation and catalysis of small molecules (CO2, CH4, CO, H2)
Heme and non-heme metallo proteins for the activation of recalcitrant substrates

Detailed program

Prerequisites

Basic knowledge of biochemistry (proteins, DNA and RNA, metabolic pathways, etc.) and of the chemical-physical properties of metal ions and coordination compounds

Teaching form

lessons regarding the concenptual aspects and monographic seminars

Textbook and teaching resource

I. Bertini, H.B. Gray, E.I. Stiefel, E.S. valentine "Biological Inorganic Chemistry: Structure and Reactivity" University Science Books, Sausalito, California

Course slides and scientific papers

Semester

First year LM - Second Semester

Assessment method

Oral examination

Office hours

Write to luca.bertini@unimib.it

Sustainable Development Goals

LIFE ON LAND