Syllabus

Syllabus

Titul dl curs	Bioinorganic chemistry
Codesc dl curs	44730
Titul suplementar	
SSD	CHEM-03/A
Lingaz	Inglese
Curs de laurea	Corso di laurea magistrale in Scienze degli alimenti per l'innovazione e l'autenticità
D'autri cursc de laurea (cursc deberieda)	
Dozenc	prof. - ass. Walter Baratta, Walter.Baratta@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/43600
Assistent didatich	
Semester	Primo semestre
Ann/Agn de stude	2nd
Credic universitars	2
Ores de ensegnament	20
Ores de laboratore	0
Ores de stude individual	30
Ores de receviment prevedudes	6
Ressumé di contegnus	The course aims to provide the students the knowledge of the properties of transition metal compounds. Particular attention will be focused on the thermodynamic and kinetic aspects of chemical reactions with metal compounds. Furthermore, the role of metals within metalloproteins and metalloenzymes in biochemical processes will be presented with the aim to better understand their mechanisms.
Argomenc dl curs	

Paroles clef	
Prerecuisic aconsiés	Inorganic and organic chemistry
Cursc propedeutics	
Modalité de ensegnament	
Oblianza de frecuenza	
Obietifs formatifs y competenzes da arjonje	The course gives a general overview of scientific contents on metalloproteins and their interaction and catalytic activity with metabolites. The aim is to understand and rationalize relevant biochemical processes involving metals in the cell. Chemistry of transition metals compounds, mono and polydentate ligands, aquo complexes, water exchange rate, complexes with EDTA, 18 electron rule, geometry of the complexes. Interaction of metals with small and organic molecules (eg. CO, carboxylic acids, phenols, amines), redox reactions and catalytic activity of metal complexes. Metals in biological systems (porphyrins, peptides, sulfur ligands). Transport, storage and control of iron. Metalloproteins and metalloenzymes: structure, oxygen transport mechanisms (hemoglobin, hemerythrin, hemocyanin), electron transfer mechanism (iron-sulfur proteins, copper blue proteins, cytochrome c). Enzymatic reactions with Zn (carbonic anhydrase, carboxypeptidase, alcohol dehydrogenase) and metals with different oxidation states, namely Fe, Cu and Co, involving oxygen, peroxides and radical reactions (cytochrome P-450, monooxygenase, dioxygenase, catalase, peroxide dismutase, vitamin B12), mediated by the NAD+ / NADH system. Anticancer Pt and Ru compounds: structure and their mechanism.
Obietifs formatifs y competenzes da arjonje (informazions suplementares)	
Sort de ejam	Oral exam with review questions to test knowledge and some application skills
Criters de valutazion	Final mark is assigned taking into account the clarity of the answers, the ability to summarize, evaluate and establish relationships among different topics
Bibliografia obligatora	Chemistry of Metalloproteins, Problems and Solutions in

	Bioinorganic Chemistry, J. J. Stephanos. A. W. Addison, John Wiley & Sons, Inc.
Bibliografia aconsieda	Principles of Bioinorganic Chemistry, S. J. Lippard, J. M. Berg, University Science Books, Mill Valley, CA
Deplù informazions	
OSS	Buona salute