Summary
Introduction to the coordination chemistry and function of metal complexes in biological systems.

Content
1. A comparison of the most relevant metal ions in biological systems.
2. The function and mechanism of enzymes that contain transition metal complexes in their active center.
3. Transition metal complexes for the transport and storage of oxygen and electrons.
4. The role of alkali- and earth alkaline metal ions in biological systems.
5. Inorganic materials in biological systems (Biomineralization).
6. Metal complexes in medicine.
7. Toxicology of transition metals.

Learning Outcomes
By the end of the course, the student must be able to:
• Recall the most important metal ions for biological systems and their function.
• Recall the most important ligands for the complexation of metal ions in biological systems.
• Differentiate essential metals with dose-dependent toxicity and generally toxic metals and recall diseases which are related to iron or copper overload in humans and the corresponding treatment.
• Recall important inorganic compounds with applications in medicinal inorganic chemistry.
• Recall the role of organometallic compounds in biological systems.
• Differentiate the most important biominerals and recall the role of sodium, potassium, magnesium, and calcium ions in biological systems.
• Recall major metalloproteins and their active sites.
• Construct a mechanism for the reactions catalyzed by metalloproteins.
• Differentiate the metalloproteins involved in oxygen binding and transport.
• Differentiate the metalloproteins involved in electron transport.

Teaching methods
Lectures

Assessment methods
Written exam

Resources
Ressources en bibliothèque
• The Biological Chemistry of the Elements / Fraústo
• Physical Methods in Bioinorganic Chemistry / Que
• Bioinorganic Chemistry / Lippard
• Biocoordination Chemistry / Fenton