

<b>Level:</b> bachelor				
<b>Course title:</b> Bioinorganic chemistry				
<b>Status:</b> elective				
<b>ECTS:</b> 5				
<b>Requirements:</b> none				
<b>Learning objectives</b> To introduce the role and function of metals in living systems, to provide deeper understanding of metal bonding in a range of protein based and non-protein organometallic molecules; to introduce students to the mechanisms of transport and storage of metals, transport and storage of oxygen, transport and storage of electrons in biological systems, metalloproteins and photosynthesis.				
<b>Learning outcomes</b> Upon successful completion of the course, the student should be able to: <ol style="list-style-type: none"> <li>1. Describe the bonding of metal ions in a range of biological molecules;</li> <li>2. Explain how oxygen is transported and identify which metal centres perform these tasks;</li> <li>3. Describe the most common metal centres for electron-transfer reactions - those based on copper and iron ions;</li> <li>4. Demonstrate knowledge of different processes involved in the transport and storage of metal ions;</li> <li>5. Explain the role of metal centres in the enzymes;</li> <li>6. Describe the role of metal centres in photoredox systems.</li> </ol>				
<b>Syllabus</b> <i>Theoretical instruction</i> Principles of coordination chemistry related to bioinorganic research. Biological ligands for metal ions. Metallobiomolecules. Metalloproteins involved in oxygen transport (haemoproteins and non-haem). Electron-transfer proteins (cytochromes, FeS proteins, copper proteins). Metal transport and storage. Metalloenzymes and coenzyme (oxidoreductases, hydrolases, isomerase). Membrane transport. Ion carriers, channels and pumps. Photosynthetic reaction centres.				
<b>Weekly teaching load</b>				Other:
Lectures: 2	Exercises:	Other forms of teaching: 2	Student research:	