

Level: PhD				
Course title: Metal ions in Biology (DSB617)				
Status: elective				
ECTS: 15				
Requirements:				
Learning objectives To obtain detailed knowledge about multiple roles of different metal ions in biological systems, their metabolism and regulation mechanisms and great importance in medicine.				
Learning outcomes At the end of the course students should be able to understand different roles of metal ions in biological systems, how their metabolism is regulated, and to realize great significance of metal metabolism in health and disease.				
Syllabus <i>Theoretical instruction</i> Requirements for metal ions in biology. Physiology, biochemistry and molecular biology of metal ions (sodium, potassium, magnesium, calcium, zinc, iron, copper, nickel, cobalt, mercury, manganese, etc.). Transport and regulatory proteins of metal ions; transport across intestine into the serum and to cells where they exert their action. Regulation of metal ions transporters and regulatory proteins at both transcription and translational level and how imbalance leads to disease, overload and deficiency. Regulation of metal ions homeostasis by different signalling pathways, from hypoxia to inflammation <i>Practical instruction</i> Chosen papers will be given to the students for analysis with a task that each student will give a seminar on the paper and write a brief commentary.				
Weekly teaching load				Other:
Lectures: 5	Exercises:	Other forms of teaching:	Student research: 5	