

Level: Bachelor				
Course title: Complexes in Analytical Chemistry				
Status: Elective				
ECTS: 7				
Requirements: None				
Learning objectives The goal of the course is to provide a balanced treatment of the theoretical and practical aspects of complex equilibria and complex application in chemical analysis.				
Learning outcomes <i>After successful completion of the course, a student is able to:</i> <ul style="list-style-type: none"> • Apply knowledge of complex formation, complex stability, equilibria processes and numerical and computational methods in analytical chemistry. • List and explain interactions in complex equilibria. • Solve problems related to complex equilibria in analytical chemistry. • Apply mathematical equations and computer programs in calculation of stability constants. • Adequately operate instruments for measuring physical and chemical characteristic of complex systems. 				
Syllabus <i>Theoretical instructions</i> Coordination compounds and their properties. Complex formation equilibria. Protonation of the ligands. The complex formation function. Stability and composition of the complexes. Mathematical considerations and evaluation of experimental data. Experimental methods for stability and protonation constants determination (potentiometry, spectroscopy). Selectivity of complex reagent. Application of the complexes in analytical chemistry. Luminescence and hemiluminescence. <i>Practical instructions</i> The experiments are designed to illustrate the concepts discussed during the lectures – experimental determination of stability constants, indicator exponent determination, experimental determination of protonation constants, and determination of the metal ion concentration using complex reaction. Numerical calculation of the equilibrium constants.				
Weekly teaching load				Other: /
Lectures: 2	Exercises: 3	Other forms of teaching: /	Student research: /	