

Level: master				
Course title: Speciation Analysis				
Status: elective				
ECTS: 6				
Requirements: none				
Learning objectives Broadening knowledge about the physical, physico-chemical, biochemical, and instrumental principles of speciation analysis. Introduction to the role, importance, application and design of methods and techniques in the speciation analysis. Training of practical skills which enable for students professional and independent handling of instrumentation and measurement techniques for speciation analysis. Developing students' ability to independently solve problems of speciation analysis.				
Learning outcomes Applying the knowledge of the methods of speciation analysis during execution of the analysis. Selecting the appropriate measurement technique, simple or sophisticated equipment, and methodology for solving complex problems in speciation analysis. Independently and completely handling the instruments in speciation analysis of different samples. Select, optimize, modify and adapt appropriate methods when performing speciation analysis. Objectively evaluate and present research results.				
Syllabus <i>Theoretical instruction.</i> Definition of species and speciation analysis. Distribution of the target element between various species. Different methodological approach to speciation (isotopic composition, oxidation stage, inorganic molecules and complexes, organic complexes, organometallic compounds, macromolecules and macromolecular complexes). Sampling, storage and sample preparation for speciation analysis. Reference materials for speciation analysis. Overview of instrumental aspects of speciation analysis (element-specific detection, chromatographic, spectroscopic, electrochemical, radiochemical, and coupled methods). Speciation of the selected elements (arsenic, mercury, lead, tin, iron, chromium, halogens, etc.) through concrete examples and problems. Quality control in speciation analysis and legal regulation. Trends in speciation analysis. <i>Practical instruction.</i> Speciation analysis of the selected elements (arsenic, mercury, lead, tin, iron, chromium, halogens, etc.).				
Weekly teaching load				Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	Student research:	