Level: bachelor

Course title: Application of AAS and ICP-MS in environmental analysis

Status: elective

ECTS: 7

Requirements: none

Learning objectives

Understanding the principles and possibilities of application of AAS and ICP-MS for the analysis of metals in environmental samples (water, air, soil, and sediment).

Learning outcomes

After completing the course, students should be able to define the basic principles of AAS and ICP-MS spectrometry; describe the instrumentation in AAS and ICP-MS spectrometry; analyze samples from the environment using AAS and ICP-MS spectrometer, process and interpret the results of the analysis performed.

Syllabus

Theoretical instruction

Selection of appropriate analytical techniques for inorganic analysis. Introduction to the basic principles of atomic absorption spectroscopy, the basic instrumentation (equipment needed for the analysis of liquid, gaseous and solid samples), an overview of techniques for the determination of trace metals. Introduction to the basic principles of ICP-MS, mass spectrometry, the types of analysis (semi-quantitative scans, quantitative, isotope ratio), analytes that can be analyzed with satisfactory control of interference. Advantages and disadvantages of ICP-MS and AAS.

Practical instruction

Practical instruction follows the theoretical one.

Weekly teaching load				Other:
Lectures: 1 (15)	Exercises: LV 3 (45)	Other forms of teaching: 1(15)	Student research:	