Level: Bachelor

Course title: Microanalysis (IHA-402)

Status: elective

ECTS: 7

Requirements: none

Learning objectives

Expanding the understanding of key theoretical and practical concepts of knowledge in the area of microanalysis. Advanced introduction to the problems of sampling, transfer and storage of small quantities/volume of the sample. Train students to analyze microsamples and components that are found in trace amounts after appropriate sample preparation.

Learning outcomes

Upon successful completion of this course, students should know to:

- Independently perform analysis of a microsample;
- Independently perform analysis of traces after appropriate preconcentration; and
- Specify the factors and interpret their impact on the ability to analyze small quantities/volumes of sample.

Syllabus

Theoretical instruction

Microanalysis and trace analysis – similarities and differences. Characteristics of chemical reactions and analytical methods. Reagents purity, sources of pollution and purification. Taking, transferring and storing samples. Analytical operations in controlled conditions. Spot test analysis. Application of spot tests in clinical analysis, in air pollution control, water quality screening, forensic analysis, etc. Catalytic method of analysis. Elemental microanalysis. Microtitrations. Microanalyzators. Microscopy (SEM, STM, AEM etc.). Miniaturized analytical systems. Microsensors. Methods of preconcentration and separation. Trends in microanalysis.

Practical instruction

Practical instruction follows the theoretical instruction.

Weekly teaching load				Other:
Lectures: 2	Exercises: 3	Other forms of teaching:	Student research:	