Level: bachelor	
Course title: Separation Techniques (IHA-302)	
Status: elective	
ECTS: 6	
Requirements: none	

Learning objectives

Expanding the understanding of key theoretical and practical knowledge in the concepts of separation techniques. Training students to independently select an adequate separation technique for a given analysis. Students will get knowledge about the developmental trends in this area.

Learning outcomes

Upon successful completion of this course, students should know:

- To apply modern techniques of separation in practice;
- To specify the factors and interpret their effect on the possibility of separating the individual components of the mixture;
- To clearly and accurately analyze and interpret the results of the analysis; and
- To suggest/formulate modern and suitable analytical approach to solving specific, complex analytical problems by using modern techniques of separation.

Syllabus

Theoretical instruction

Theoretical principles of separation techniques. Macro- and meso-separation techniques (filtration, distillation, extraction, etc.). Chromatographic separation (definition and classification of chromatographic mechanisms, sorption isotherm, the retention behaviour, the distribution coefficient, capacity, column selectivity, column efficiency, diffusion, mass transfer, resolution, quantitative methods). Gas chromatography (principles, tools, and stationary phase). Sample preparation for gas-chromatographic analysis (solid phase extraction, derivatization, etc.) and application. Liquid chromatography (principles, stationary and mobile phases and instruments). Preparation of samples for liquid-chromatographic analysis and application. Supercritical fluid chromatography. Capillary electrophoresis. Application of capillary electrophoresis. Multidimensional separation techniques. Combined methods.

Practical instruction

Practical instruction follows the theoretical instruction.

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