KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Monographic lecture - Sampling and its preparing for analysis	13.3.1028

Name of unit administrating study

null

Studies

faculty	field of study		
Wydział Chemii	Biznes chemiczny	type	drugiego stopnia
		form	stacjonarne
		specialty	wszystkie
		specialization	wszystkie

Teaching staff

prof. UG, dr hab. Monika Paszkiewicz

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 30 hours

ECTS credits

3
classes - 30 h
tutorial classes – 10 h
student's own work – 35 h

Total: 75 h - 3 ECTS

The academic cycle

2023/2024 winter semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

multimedia-based lecture

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

- (mid-term / end-term) test
- graded course credit based on individual grades obtained during the semester

The basic criteria for evaluation

The final grade will be determined on the basis of the arithmetic mean of the 2 partial grades received during the semester. A negative final grade can be improved on the basis of an additional colloquium. Positive evaluation of the colloquium is min. 51% of possible points.

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements
none

B. Prerequisites
none

Aims of education

Aims of education
The aim of the lecture is to familiarize students with the issue of sampling and preparation of samples for further stages of chemical analysis. Knowledge of modern sampling and preparation techniques that are an integral part of the analytical process.

Course contents

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The program includes discussion of issues related to the collection and preparation of air, water and soil samples as well as other selected materials as well as natural samples for further chemical analyzes. General principles of the sampling process, sample representativeness, sample components (matrix, analyte). Problems of trace analysis. Units used to express concentrations of trace analytes. Sampling in environmental analysis. Preservation and storage of samples and issues related to the loss of analytes. Matrixes and their impact on the preparation of samples for analysis. Preparation of samples for analysis with modern separation techniques: extraction techniques (among others liquid-liquid extraction, gas phase extraction, solid phase extraction, solid phase microextraction, extraction of solid samples), membrane techniques and chromatographic techniques. Examples of sampling and preparation of samples for analysis.

Bibliography of literature

Bibliography of literature

Literature required to pass the course

• Pawliszyn J. Sampling and sample preparation for field and laboratory: fundamentals and new directions in sample preparation. Elsevier, 2002.
• Mitra S. Sample preparation techniques in analytical chemistry. Wiley, 2003.
• Namieśnik J., Jamrógiewicz Z., Pilarczyk M., Torres L. Przygotowanie próbek środowiskowych do analiz. WNT, Warszawa, 2000.
• Namieśnik J., Łukasiak J., Jamrógiewicz Z. Pobieranie próbek środowiskowych do analiz. PWN, Warszawa, 1995.
• Harvey D. Modern analytical chemistry. McGraw-Hill, USA, 2000.
• Zhang C.C. Fundamentals of Environmental Sampling and Analysis. Wiley, 2007.
• Popek E. P. Sampling and analysis of environmental chemical pollutants. Academic Press, California, USA, 2003.

Extracurricular readings

• Namieśnik J., Jamrógiewicz Z., Pilarczyk M., Torres L. Przygotowanie próbek środowiskowych do analiz. WNT, Warszawa, 2000.
• Namieśnik J., Łukasiak J., Jamrógiewicz Z. Pobieranie próbek środowiskowych do analiz. PWN, Warszawa, 1995.
• Stepnowski P., Synak E., Szafranek B., Kaczyński Z. Techniki separacyjne. Wydawnictwo UG 2010.

The learning outcomes (for the field of study and specialization)	**Knowledge**
	Skills
	Social competence

Contact

monika.paszkiewicz@ug.edu.pl