University of Gdańsk

Subject card

Subject name and code	Monographic lecture - Sampling and its preparing for analysis, PG_00056798		
Field of study	Chemical Business		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
Education level	Master's studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	academic	Assessment form	credit
Conducting unit	Department of Environmental Analysis -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Joanna Dołżonek	
	Teachers	dr Joanna Dołżonek	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	20.0	25.0	75

Subject objectives

The purpose of the lecture is to familiarize students with the issue of sampling and sample preparation, being an integral part of the analytical process, for further stages of chemical analysis.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHMU2_U01] Is able to, on the basis of her/his knowledge, propose a solution to problems in chemistry, taking into account the economic aspect by using advanced measurement techniques.	Upon completion of the course, the student: 1. uses correct units to express concentrations of trace analytes 2. is able to select appropriate matrices and determine their effect on the preparation of samples for analysis	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[BCHMU2_U02] Is able to define her/his interests, develop them within the chosen direction and in connection with the subject of her/ his master's thesis by implementing the process of self-education and planning her/his professional career.	Upon completion of the course, the student: 1. knows how to propose modern techniques for collecting and preparing samples for chemical analysis	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[BCHMU2_W01] Knows and understands complex physicochemical processes and is able to analyse their course in connection with other fields of science.	Upon completion of the course, the student: 1. introduces and describes techniques, tools and apparatus sets suitable for environmental sampling: soils, water and ambient air 2. lists factors that cause loss of analytes or contamination of the sample 3. presents and describes methods of sample storage and preservation 4. presents and describes extraction and chromatographic techniques used to prepare samples for specific analysis	[SW4] test/exam - oral or written
[BCHMU2_K04] Is willing to properly assess the acquired knowledge, respect and disseminate it in order to solve specific cognitive and practical issues.	Upon completion of the course, the student: - understands the need for further education enabling him/her to acquire specialized qualifications	[SK4] test/exam - oral or written
[BCHMU2_W05] Knows and understands the main trends in the development of chemistry combined with economics as two interpenetrating scientific disciplines.	Upon completion of the course, the student: 1. explains the main objectives and importance of sampling and preparation of samples for analysis 2. defines the concepts of sampling and preparation of samples for analysis 3. has knowledge of the economic aspect of the various sample preparation techniques	[SW4] test/exam - oral or written

Subject contents

The content of the lecture includes: learning about modern techniques and general basics of environmental sampling, sample representativeness, sample components, problems of trace analysis, sample fixation and storage and issues related to loss of analytes, matrices and their influence on sample preparation for analysis, sample preparation for analysis by modern separation techniques.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Additional analytical tasks/ problems to be solved during the lecture	0.0%	10.0%
Two written exams (open and test questions)	51.0%	90.0%

Recommended reading	Basic literature	A.1. used during classes 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. Namiesnik J., Jamrogiewicz Z., Pilarczyk M., Torres L. Przygotowanie probek srodowiskowych do analiz. WNT, Warszawa, 2000. Namiesnik J., Łukasiak J., Jamrogiewicz Z. Pobieranie probek srodowiskowych 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. A.2. studied independently by the student Namiesnik J., Jamrogiewicz Z., Pilarczyk M., Torres L. Przygotowanie probek srodowiskowych do analiz. WNT, Warszawa, 2000. Namiesnik J., Łukasiak J., Jamrogiewicz Z. Pobieranie probek srodowiskowych do analiz. PWN, Warszawa, 1995. Stepnowski P., Synak E., Szafranek B., Kaczynski Z. Techniki separacyjne. Wydawnictwo UG 2010.
	Supplementary literature	B. Supplementary literature- Scientific publications related to the program content of the subject
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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