

Subject card

Subject name and code	Experimental assessment of product safety, PG_00183833						
Field of study	Eksperymentalna ocena bezpieczeństwa produktu (Ćw. laboratoryjne)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
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	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Intermolecular Interactions -> Department of Bioinorganic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Mateusz Kowalik				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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		5.0		15.0	50
Subject objectives	The aim of this course is to prepare students to independently assess the impact of cosmetic packaging on the quality and safety of cosmetic products using modern analytical techniques. Students will learn to identify contaminants migrating from packaging, analyze the composition of packaging materials, and interpret the results in terms of the risk to the stability and safety of cosmetics.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[CHEMMU2_U02] Critically assesses the results of conducted, performed observations and theoretical calculations and discusses errors.		The student is able to interpret the results of conducted experiments.		[SU1] wypowiedź ustna/rozmowa/dyskusja [SU2] prezentacja/projekt/referat/raport		
	[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.		The student is fluent in advanced concepts of chemistry and related sciences.		[SU3] opracowanie tekstowe/praca pisemna		
	[CHEMMU2_K05] Understands the need for independent search of information in scientific literature and popular science magazines.		The student is able to find and use professional literature in scientific writings in the context of conducted experiments.		[SK1] wypowiedź ustna/rozmowa/dyskusja [SK2] prezentacja/projekt/referat/raport		
	[CHEMMU2_W03] Demonstrates extended knowledge in the field of modern measuring techniques used in chemical analysis.		The student knows the basics and applications and is able to use advanced equipment for spectroscopic and crystallographic research.		[SW3] opracowanie tekstowe/praca pisemna [SW5] realizacja zadania problemowego		
Subject contents	Regulations governing cosmetic safety (packaging and its contents). Types of packaging. Characteristics of packaging materials. Contamination of packaging material. Analytical techniques for assessing cosmetic safety. The influence of storage conditions on the durability of packaging materials and cosmetics. Study of the interaction between the mass of a cosmetic product and its packaging.						
Prerequisites and co-requisites	inorganic chemistry, organic chemistry, instrumental analysis, spectroscopy						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written report	51.0%	20.0%
	test	51.0%	80.0%
Recommended reading	Basic literature	Z. Kęcki, Podstawy spektroskopii molekularnej, Wydawnictwo Naukowe PWN, Warszawa 1998 R. M. Silverstein, F. X. Webster, D. J. Kiemle, Spektroskopowe metody identyfikacji związków organicznych, Wydawnictwo Naukowe PWN, Warszawa 2012 W. Zieliński, A. Rajca (red.), Metody spektroskopowe i spektrometria mas w zastosowaniu do identyfikacji związków organicznych, Wydawnictwo Politechniki Śląskiej, Gliwice 2018 K. Nakamoto, Infrared and Raman Spectra of Inorganic and Coordination Compounds, John Wiley & Sons, 2008 C. F. Holder, R. E. Schaak, Tutorial on Powder X-ray Diffraction for Characterizing Nanoscale Materials, ACS Nano 2019, 13, 7, 73597365	
	Supplementary literature	E. Pretsch, P. Buhlmann, M. Badertscher, Structure Determination of Organic Compounds. Tables of Spectral Data, Springer, 2009 B. Stuart, Infrared Spectroscopy: Fundamentals and Applications, John Wiley & Sons, 2004 L. A. Kazicyna, N. B. Kupletska, Metody spektroskopowe wyznaczania struktury związków organicznych, Państwowe Wydawnictwo Naukowe, Warszawa 1974 Z. Kosturkiewicz, Metody Krystalografii, Wydawnictwo Naukowe UAM, Poznań 2000 K. Preusser, J. M. Moore, K. Duke, P. Dhungana, C. V. Solomon, D. T. Genna, B.-W. Park, Electrochemical Detection of Multiple Heavy Metal Ions Using a Hybrid Nanocomposite of a MetalOrganic Framework and Cellulose Nanocrystal-PEDOT:PSS, Langmuir 2025, 41, 35, 23289-23302	
	eResources addresses	Supplementary http://www.scopus.com - Scopus http://www.webofscience.com - Web of Science	
	Example issues/ example questions/ tasks being completed	-	
Work placement	Not applicable		

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