



## Subject card

Subject name and code	, PG_00053535						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject				2025/2026	
Education level	first-cycle studies	Subject group				Optional subject group Subject group related to scientific research in the field of study	
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	4	Language of instruction				Polish	
Semester of study	7	ECTS credits				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Adam Macierzanka					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	1.0		9.0	25	
Subject objectives	Gaining knowledge of the technology of preparation, composition, analysis and the use of various groups of cosmetic products in the context of biomedical applications of cosmetic preparations.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W52] Knows and understands, to an advanced extent, selected aspects of chemistry and biochemistry, constituting general knowledge related to the field of study	The student has acquired an extended knowledge in the field of chemistry and biochemistry and in relation to the biomedical aspects of cosmetology and cosmetic products.			[SW1] Assessment of factual knowledge		
	[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	The student is able to critically analyze the interaction of the components of cosmetic products from the point of view of the impact of their interactions on the performance characteristics of end products, including in relation to the technical aspects of the use of such products in biomedical applications.			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
Subject contents	Structure and function of human skin. Compounds reported to increase the skin barrier. Types of cosmetic products and their effects. Materials used in cosmetics and criteria of their selection, with particular emphasis on biologically active materials. Cosmetic emulsions and their structure and stabilization methods. The surfactants in cosmetics. The technology for producing various types of cosmetic emulsions. Regulations concerning cosmetic materials and cosmetic products. Understanding the mechanisms of action of advanced carrier structures of biologically active substances in terms of the biomedical use of cosmetic preparations.						
Prerequisites and co-requisites	Basic knowledge of organic chemistry and selected analytical methods.						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Written exam	50.0%			100.0%		

Recommended reading	Basic literature	1. J. Marcinkiewicz - Salmonowiczowa, Zarys chemii i technologii kosmetyków, Wyd. Politechniki Gdańskiej, Gdańsk, 1995. 2. W.S. Brud, R. Glinka, Technologia Kosmetyków, Oficyna Wydawnicza, Łódź, 2001. 3. M.M. Rieger, Surfactants in Cosmetics, M. Dekker, Inc. New York, 1985. 4. L. Ho Tan Tai, Formulating Detergents and Personal Care Products, AOCS Press, Champaign, 2000. 5. Analysis of Cosmetic Products, ed. A. Salvador, A.Chisvert, Elsevier, Amsterdam, 2007.
	Supplementary literature	6. J. Przondo, Związki powierzchniowo czynne i ich zastosowanie w produktach chemii gospodarczej, Wydawnictwo Politechniki Radomskiej, 2007. 7. K. Gawrońska, K. Kacprzak, Chemia kosmetyczna: ćwiczenia laboratoryjne; UAM, Warszawa 2008. 8. R. Glinka, M. Glinka; Receptura kosmetyczna z elementami kosmetologii: tom 1; Oficyna Wydawnicza MA, Łódź, 2008
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Those will be directly related to the topics described above in the "Class structure" section.	
Work placement	Not applicable	

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