



Subject card

Subject name and code	COSMETICS INDUSTRY AND THE ENVIRONMENT, PG_00064319						
Field of study	PRZEMYSŁ KOSMETYCZNY A ŚRODOWISKO						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group		Optional subject group Specialty 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	1		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Biotechnology and Microbiology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Adam Macierzanka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45		5.0		25.0	75
Subject objectives	The aim of the course is to familiarize students with the impact of cosmetic products, at each stage of their life cycle, on the environment and its individual elements.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W04] recognises scientific, technological, organisational and economic opportunities and constraints in technology and related fields		The student recognizes scientific, technological, organizational and economic possibilities and limitations in the technology of producing cosmetic products.		[SW1] Ocena wiedzy faktograficznej		
	[K7_K02] understands the non-technical aspects and implications of graduate activity, including the impact on the environment		The student is aware of the environmental impact of the cosmetic product manufacturing process at every stage of the product's life.		[SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce		
	[K7_U05] uses instrumental methods applied in technology and related fields		The student is able to use instrumental methods used in the technology of producing cosmetic products and related fields		[SU4] Ocena umiejętności korzystania z metod i narzędzi [SU1] Ocena realizacji zadania		
	[K7_W05] recognises the key developments in research, apparatus and technology in technology and related fields		The student is able to assess and predict the impact of social and institutional requirements on the development of cosmetics production technology		[SW1] Ocena wiedzy faktograficznej		
Subject contents	Course content – lecture Regulations and legal requirements. Product life cycle. Characterization of functional properties and environmental impact of ingredients of cosmetic compositions. Environmental aspects of raw material acquisition, finished product production technology and packaging. Toxicity of surfactants and their influence on the toxicity of other substances. Transformations of ingredients of cosmetic compositions during self-purification of water. Methods of removing surfactants from water (foaming, coagulation, nanofiltration, ion exchange, biodegradation). Methods of minimizing the negative impact of cosmetic ingredients on the environment (e.g. easily biodegradable surfactants).						
Prerequisites and co-requisites	Basic knowledge of cosmetics chemistry and technology						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Exam		60.0%		60.0%		
	Laboratory		60.0%		40.0%		

Recommended reading	Basic literature	A. Sionkowska, Chemia kosmetyczna. Wybrane zagadnienia, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2019. M. Kjellin, M., & I.A. Johansson. Surfactants from Renewable Resources. John Wiley & Sons, New York 2010. A. Sahota. Sustainability: how the cosmetics industry is greening up. John Wiley & Sons, Chicago 2014. H. Sonntag, Koloidy, PWN, Warszawa, 1992. T.H. Dzido, W Gołkiewicz, Zjawiska powierzchniowe i układy dyspersyjne, Rozdz.6 w TW Hermann (red.), Chemia fizyczna. Podręcznik dla studentów farmacji i analityki medycznej, WL PZWL, 2007 D. Sharma. Biosurfactants: Greener Surface Active Agents for Sustainable Future: Microbial Surfactants. Springer Nature, Singapore 2021.
	Supplementary literature	T.H. Dzido, W Gołkiewicz, Zjawiska powierzchniowe i układy dyspersyjne, Rozdz.6 w TW Hermann (red.), Chemia fizyczna. Podręcznik dla studentów farmacji i analityki medycznej, WL PZWL, 2007 D. Sharma. Biosurfactants: Greener Surface Active Agents for Sustainable Future: Microbial Surfactants. Springer Nature, Singapore 2021.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Describe biodegradation phenomena for cosmetic storage. What is the process of self-purification of water? Which self-purification mechanism is most important in case of surfactant contaminated water reservoirs? Describe the positive and negative effects of surfactant presence in water and soil.	
Practical activities within the subject	Not applicable	

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