GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	COSMETICS INDUSTRY AND THE ENVIRONMENT, PG_00064319		
Field of study	Chemical Technology		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2024/2025
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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Adam Macierzanka	
	Teachers	dr inż. Ilona Kłosowska-Chomiczewska dr inż. Aneta Pacyna-Kuchta	

Lesson types and methods of instruction

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_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] Assessment of factual knowledge
[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	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[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] Assessment of ability to solve problems that arise in practice
[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] Assessment of factual knowledge

Subject contents

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
Laboratory	60.0%	40.0%
Exam	60.0%	60.0%

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	Adresy na platformie eNauczanie:
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.	
Work placement	Not applicable	

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