



Subject card

Subject name and code	BIO-COMPONENTS IN COSMETICS, PG_00064325						
Field of study	BIOKOMPONENTY W KOSMETYKACH						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group		Optional subject group Specialty 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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Biotechnology and Microbiology -> Faculty of Chemistry -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Anna Brillowska-Dąbrowska				
	Teachers		dr hab. inż. Anna Brillowska-Dąbrowska				
			dr inż. Martyna Mroczyńska-Szeląg				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	0.0	45
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 1935 BIOKOMPONENTY W KOSMETYKACH 2025 https://enauczanie.pg.edu.pl/2025/course/view.php?id=1935						
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	Lecture:						
	To provide students with theoretical knowledge concerning the origin, structure, properties, and applications of biologically active ingredients used in modern cosmetic products.						
	Project:						
	The objective of the project Biocomponents in Cosmetics is to broaden students knowledge of natural active ingredients used in cosmetology, their biological properties, and their impact on the human body and skin microbiome.						
	Project practical part:						
	Students will acquire practical skills in microbiology and molecular biology, essential for assessing the safety and effectiveness of biologically active ingredients used in cosmetic products.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_K03] can interact and work in a group, taking on a variety of roles	The student is able to prepare, in a group, a review of scientific information and critically analyze it.	[SK1] Ocena umiejętności pracy w grupie
	[K7_W01] defines the phenomena, processes and laws of nature used to produce consumer goods and provide services	The student has knowledge of the origin, properties, mechanisms of action, and applications of biologically active ingredients used in cosmetics.	[SW1] Ocena wiedzy faktograficznej
	[K7_U05] uses instrumental methods applied in technology and related fields	The student is able to select an appropriate methodology for specific tasks in an industrial microbiology laboratory.	[SU2] Ocena umiejętności analizy informacji [SU4] Ocena umiejętności korzystania z metod i narzędzi
	[K7_U02] carries out experiments using properly selected techniques and apparatus, taking advantage of new developments in technology and related fields	The student is able to apply molecular biology techniques appropriate for the cosmetic industry.	[SU4] Ocena umiejętności korzystania z metod i narzędzi
Subject contents	Course content – lecture The course covers an introduction to cosmetic biocomponents, including definitions, classification, and natural sources. It addresses plant-derived active ingredients, such as extracts, oils, and phytopetides, their biological properties, and applications in skin care. Biopolymers and functional components, including proteins, polysaccharides, and lipids, are analyzed in terms of their role in cosmetic formulations. The course also explores probiotics, prebiotics, and postbiotics and their effects on the skin microbiome. Enzymes and other biologically active components, their mechanisms of action, and applications in cosmetic products are discussed. Students learn about factors affecting the stability and safety of biocomponents and methods for evaluating their effectiveness. The course concludes with trends and innovations in bio-inspired cosmetics, including modern production methods and the potential of biocomponents in the cosmetics of the future. Course content – project The course introduces cosmetic biocomponents, covering their definitions, classification, and natural sources. It examines plant-derived active ingredients, including extracts, oils, and phytopetides, focusing on their biological properties and applications in skin care. Biopolymers and functional components, such as proteins, polysaccharides, and lipids, are discussed in relation to their role in cosmetic formulations. The course also addresses probiotics, prebiotics, and postbiotics and their influence on the skin microbiome. Enzymes and other biologically active substances, their mechanisms of action, and applications in cosmetic products are analyzed. Students explore factors affecting the stability and safety of biocomponents and learn methods for evaluating their effectiveness. The course concludes with an overview of trends and innovations in bio-inspired cosmetics, highlighting modern production techniques and the potential of biocomponents in future cosmetic products.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Short tests (laboratory part)	60.0%	12.5%
	Project presentation	60.0%	25.0%
	Practical test (laboratory part of the project)	60.0%	12.5%
	Final test (lecture)	60.0%	50.0%
Recommended reading	Basic literature	Scientific publications related to the lecture topics	
	Supplementary literature	Depending on the project topic	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Final exam: How can you test whether a given essential oil has bactericidal properties? Short tests: Which method can be used to isolate DNA?		
Practical activities within the subject	Not applicable		

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