

Subject card

Subject name and code	Application of biomolecules in cosmetics, PG_00082058						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Medical Chemistry -> Department of Biomedical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Julia Witkowska				
	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	To acquaint students with the structure, application and isolation of structural components (collagen, elastin, keratin) of the human body as well as the structure and isolation of the hyaluronic composition.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.		The student has the ability to interpret the results of experiments and draw correct conclusions.		[SU1] oral statement/conversation/discussion [SU3] text preparation/written work		
	[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.		The student uses the acquired theoretical knowledge during laboratory classes.		[SW1] oral statement/conversation/discussion		
	[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.		The student demonstrates independence in preparing reports and preparing for classes by using available literature and scientific articles.		[SK3] text preparation/written work [SK6] demonstration of practical skills [SK8] observation of student's independent or team work		
	[CHEML3_W05] Has basic knowledge of the chemical specialisation studied.		Student has knowledge of the structure and function of proteins and the ability to isolate and identify them.		[SW4] test/exam - oral or written [SW3] text preparation/written work		

Subject contents	- Isolation of collagen from fish skins and its molecular characterisation as a cosmetic ingredient - Isolation of elastin from tendons and its characterisation - Isolation of keratin from hair using microwave technology - Isolation of hyaluronic acid from eggshells and its chemical characterisation.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	points for tests and reports from laboratory exercises	51.0%	100.0%
Recommended reading	Basic literature	G. Baki and Gabriella. Baki, <i>Introduction to cosmetic formulation and technology</i> . John Wiley and Sons Ltd, 2022. Accessed: Jun. 13, 2024 L. Dai and I. Hansenne-Cervantes, Protein-Based Materials in Cosmetics, <i>Handbook of the Extracellular Matrix</i> , pp. 123, 2023, doi: 10.1007/978-3-030-92090-6_18-1. G. Secchi, Role of protein in cosmetics, <i>Clin Dermatol</i> , vol. 26, no. 4, pp. 321325, 2008, doi: 10.1016/J.CLINDERMATOL.2008.04.004.	
	Supplementary literature	M. Molski, <i>Chemia Piękna Tom 1</i> . Warszawa: Wydawnictwo Naukowe PWN, 2021. Accessed: Jun. 13, 2024 A. Marzec, <i>Chemia nowoczesnych kosmetyków - Substancje aktywne w preparatach i zabiegach kosmetycznych - Marzec</i> , I. Dom Organizatora TNOiK, 2010.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	The structure of elastin and collagen. Allysine and cross-linking of collagen and elastin. Functions and structure of hyaluronic acid.	
Work placement	Not applicable		

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