



## Subject card

Subject name and code	Chemistry and nanotechnology of cosmetics, PG_00038596						
Field of study	Nanotechnology						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Colloid and Lipid Science -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Patrycja Szumała				
	Teachers		dr hab. inż. Patrycja Szumała				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	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		0.0		0.0	45
Subject objectives	Knowing the technology of preparation, composition and use of selected cosmetic products.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K05		Is able to produce various forms of cosmetic formulations, present information about cosmetic formulations in a generally comprehensible manner, evaluate cosmetics available on the market and described in the literature		[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills		
	K6_U06		Able to identify various problems and technological and scientific principles related to the production and application of nanostructures in cosmetics		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W07		Has knowledge of the physical and chemical basis of nanotechnology in the field of cosmetics (methods of obtaining nanostructures, types of nanostructures, their properties, basic research methods)		[SW1] Assessment of factual knowledge		

Subject contents	<p>Structure and function of human skin. Compounds affecting the increase in skin barrier.</p> <p>Types of cosmetic products and their performance.</p> <p>Raw materials in cosmetics and criteria for their selection, with particular focus on biologically active materials.</p> <p>Nanomaterials and nanocarriers in cosmetic.</p> <p>Emulsions, nanoemulsions, microemulsions and their construction and method of stabilization. The technology of manufacturing various types of cosmetic emulsions.</p> <p>Surfactants in cosmetics.</p> <p>Haircare products: shampoos, conditioners, conditioning preparations.</p> <p>Make-up preparations. Powders, shadows, ink, lipstick, nail polish, etc.</p> <p>Technology of perfume products.</p> <p>Technology of deodorants and antiperspirants.</p> <p>Legal regulations on raw materials and cosmetic products.</p>											
Prerequisites and co-requisites	Basic knowledge of organic and inorganic chemistry.											
Assessment methods and criteria	<table border="1" data-bbox="448 692 1487 819"> <thead> <tr> <th data-bbox="448 692 794 730">Subject passing criteria</th> <th data-bbox="794 692 1141 730">Passing threshold</th> <th data-bbox="1141 692 1487 730">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 730 794 768">written exam</td> <td data-bbox="794 730 1141 768">50.0%</td> <td data-bbox="1141 730 1487 768">60.0%</td> </tr> <tr> <td data-bbox="448 768 794 819">presence in the laboratory and reports</td> <td data-bbox="794 768 1141 819">100.0%</td> <td data-bbox="1141 768 1487 819">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	written exam	50.0%	60.0%	presence in the laboratory and reports	100.0%	40.0%
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Recommended reading	Basic literature	<p>1. J. Marcinkiewicz - Salmonowiczowa, Zarys chemii i technologii kosmetyków, Wyd. Politechniki Gdańskiej, Gdańsk, 1995.</p> <p>2. W.S. Brud, R. Glinka, Technologia Kosmetyków, Oficyna Wydawnicza, Łódź, 2001.</p> <p>3. M.M.Rieger, Surfactants in Cosmetics, M. Dekker, Inc. New York, 1985.</p> <p>4. L. Ho Tan Tai, Formulating Detergents and Personal Care Products, AOCs Press, Champaing, 2000.</p> <p>5. Analysis of Cosmetic Products, ed. A. Salvador, A.Chisvert, Elsevier, Amsterdam, 2007.</p>										
	Supplementary literature	<p>6. J. Przondo, Związki powierzchniowo czynne i ich zastosowanie w produktach chemii gospodarczej, Wydawnictwo Politechniki Radomskiej, 2007.</p> <p>7. K. Gawrońska, K. Kacprzak, Chemia kosmetyczna: ćwiczenia laboratoryjne; UAM, Warszawa 2008.</p> <p>8. R. Glinka, M. Glinka; Receptura kosmetyczna z elementami kosmetologii: tom 1; Oficyna Wydawnicza MA, Łódź, 2008</p>										
	eResources addresses	Adresy na platformie eNauczanie: Chemia i nanotechnologia kosmetyków 2021/2022 (Archiwizowany 2022-04-22) - Nowy - Moodle ID: 25209 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25209">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25209</a>										
Example issues/ example questions/ tasks being completed	-											
Work placement	Not applicable											