

Subject card

Subject name and code	Application of in vitro methods in cosmetic research, PG_00183831						
Field of study	Wykorzystanie metod in vitro w badaniu kosmetyków (Wykład)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Master'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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Biological Sensitizers -> Department of Physical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Magdalena Zdrowowicz-Żamojć				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	The objective of this course is to introduce students to the fundamental principles of toxicology, cell culture, and the application of in vitro methods in the assessment of cosmetic substances.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	Understands the basics of cell culture methods. Can classify basic cytotoxicity assays used in biology. Knows and understands basic concepts of toxicology.	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU4] test/egzamin - ustny lub pisemny
	[CHEMMU2_W03] Demonstrates extended knowledge in the field of modern measuring techniques used in chemical analysis.	Demonstrates advanced knowledge of UV-VIS measurements using a spectrophotometer and microplate reader. Knows the fluorescent labeling and fluorescence measurement methods.	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja
	[CHEMMU2_W02] Has extended and in-depth knowledge in the field of basic chemistry.	Knows the reaction mechanisms underlying basic cytotoxicity tests.	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	Understands the purpose of using specific devices and in vitro methods for cosmetic testing. Selects appropriate in vitro testing methods to confirm the safety of cosmetic raw materials. Knows the legal regulations regarding the use of in vitro methods in cosmetic testing.	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja
	[CHEMMU2_W09] Classifies specialist IT tools used in statistical evaluation of experiment results.	Knows the assumptions, goals and limitations of statistical methods used to interpret experimental data.	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja
Subject contents	- Basics of Toxicology - Pathological Changes in the Skin Caused by Chemical Substances - In vitro, in vivo, ex vivo, and in silico Methods - Legal Regulations - Basics of 2D and 3D Cell Culture - Cytotoxicity Tests - Selected Applications of 2D and 3D Models in Cosmetic Substance Testing, e.g.: In vitro Methods in Sunscreen Product Testing Skin Irritation Assessment Skin Phototoxicity Assessment Evaluation of Eye Irritation Using Cell Lines		
Prerequisites and co-requisites	none		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam in the form of a test	51.0%	100.0%
Recommended reading	Basic literature	Stanisława Stokłosowa, Hodowla komórek i tkanek.	
		Atterwill, Christopher Kenneth, and Christopher Edward Steele, eds. In vitro methods in toxicology.	
		Joachim W. Fluhr ,Practical Aspects of Cosmetic Testing: How to Set up a Scientific Study in Skin Physiology.	
		Jurzak, Magdalena, Anna Goździalska, Jerzy Jaśkiewicz, Bezpieczne stosowanie współczesnych kosmetyków.	
	Supplementary literature	Almeida, Andreia, Bruno Sarmiento, and Francisca Rodrigues. "Insights on in vitro models for safety and toxicity assessment of cosmetic ingredients." International journal of pharmaceuticals 519.1-2 (2017): 178-185.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			

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