

Subject card

Subject name and code	Cosmetics microbiology, PG_00183756						
Field of study	Mikrobiologia kosmetyków (Ćw. laboratoryjne)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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	1		Language of instruction		Polish polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Joanna Żebrowska				
	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		4.0		16.0	50
Subject objectives	The aim of the course is to familiarise students with the basics of industrial and cosmetic microbiology, microflora typical of raw materials and cosmetic products, as well as methods of testing and microbiological control of cosmetics. The course takes into account current legal regulations and GMP requirements for the cosmetics industry.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_K03] Understands the need for systematic work on various projects of a long-term nature and knows how to set priorities for the implementation of undertaken tasks.	The student plans and carries out a research project in the field of cosmetics microbiology, is able to define the stages of work and priorities for action.	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	The student uses chemical and microbiological knowledge to develop procedures for testing the microbiological purity of cosmetics and assessing the effectiveness of preservatives.	[SU2] prezentacja/projekt/referat/raport
	[CHEMMU2_K06] Undertakes research tasks consciously and responsibly, understanding the social aspects of the practical application of the acquired knowledge and skills and the responsibility related to it.	The student complies with the principles of microbiological research ethics and is aware of the social responsibility associated with the safety of cosmetics.	[SK6] demonstracja umiejętności praktycznych
	[CHEMMU2_W10] Uses knowledge of the principles of operation of the basic scientific and research apparatus used in chemistry.	The student knows the principles of operation of equipment used for microbiological testing in cosmetology (including autoclaves, incubators, spectrophotometers, and laminar flow cabinets).	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/dyskusja
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	The student follows and discusses the latest research in the field of cosmetics microbiology and current trends in the assessment of the microbiological safety of cosmetic products.	[SW1] wypowiedź ustna/rozmowa/dyskusja [SW2] prezentacja/projekt/referat/raport
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	The student has in-depth knowledge of the microflora of cosmetics, methods of microbiological analysis and principles of maintaining the microbiological purity of cosmetic products.	[SW4] test/egzamin - ustny lub pisemny [SW5] realizacja zadania problemowego
	[CHEMMU2_U02] Critically assesses the results of conducted, performed observations and theoretical calculations and discusses errors.	The student is able to interpret the results of microbiological analyses of cosmetics, assess their reliability and identify possible sources of error.	[SU3] opracowanie tekstowe/praca pisemna [SU7] wpisy i opinia w dzienniczku praktyk
	[CHEMMU2_U03] Finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry.	The student is able to search for and analyse current standards, publications and databases concerning the microbiology of cosmetics and methods of testing them.	[SU7] wpisy i opinia w dzienniczku praktyk [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
Subject contents	1. Familiarisation with the principles of aseptic work and health and safety. 2. Preparation of culture media and sterilisation of materials. 3. Performing cultures and determining the number of microorganisms. 4. Microscopy techniques. Microorganism morphology staining methods and observation under a microscope. Microorganism morphology culture and identification methods. 5. Collecting cosmetic samples for microbiological testing. 6. Identification of bacteria and fungi in cosmetics. 7. Control of the effectiveness of antimicrobial agents. Selected methods of microbiological control of cosmetics. 8. Performing preservation tests, simulating cosmetic contamination and analysing microflora growth. 9. Performing a preservative efficacy test (challenge test). 10. Preparation and interpretation of microbiological test results. 11. Preparation of a report and discussion of experimental errors.		

Prerequisites and co-requisites	Theoretical and practical knowledge of the basics of biology and chemistry, in particular: knowledge of cell structure and function, the basics of biochemistry and microbial metabolic processes, knowledge of basic chemical reactions occurring in organic and inorganic compounds. Basic knowledge of general microbiology, including: classification and characteristics of microorganisms, principles of cultivation, multiplication and identification of microorganisms, basic aseptic techniques and principles of working in a microbiological laboratory.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	activity	0.0%	10.0%
	report	51.0%	40.0%
	exam	51.0%	50.0%
Recommended reading	Basic literature	1. Gospodarek E, Mikucka A: Microbiology in cosmetology. PZWŁ, Warsaw 2013 2. Schlegel H.G: General Microbiology PWN 2008 or Murray PR, Rosenthal KS, Pfaller MA: Microbiology. Elsevier Urban and Partner, Wrocław 2011. 3. Microbiology of cosmetics, collective work edited by Prof. Jerzy Mierzejewski, 2013, ISBN 978-83-7351-394-5 4. Fundamentals of Cosmetics Microbiology laboratory classes Rajkowska Katarzyna, ISBN 978-93-200-4589-5.	
	Supplementary literature	1. Szewczyk E: Bacteriological diagnostics. PWN, Warsaw 2013 2. Jawetz, Melnick & Adelbergs Medical Microbiology Brooks et al. 2013, 26th Edition 3. Cosmetology and skin pharmacology A. Zaleśna, K. Kostrzewa ISO 11930:2019 4. Cosmetics Evaluation of the effectiveness of preservatives 5. Cosmetology ed. K. Majchrzycka	
	eResources addresses		
Example issues/ example questions/ tasks being completed	What groups of microorganisms can be found in cosmetics? What factors promote the growth of microorganisms in cosmetic products? What does the term microbiological purity of cosmetics mean? What is the principle of asepsis? What are the stages of determining the total number of microorganisms in a cosmetic product? Which microorganisms are considered indicator organisms in cosmetic testing? What is a challenge test and how is it performed? How should the results of microbiological testing be interpreted in relation to the requirements of the standard? What are the most common mistakes made during the microbiological analysis of cosmetics? Why should preservatives in cosmetics not be used in excess?		
Work placement	Not applicable		

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