



Subject card

Subject name and code	Surfactant Technology, PG_00064323						
Field of study	TECHNOLOGIA ZWIĄZKÓW POWIERZCHNIOWO CZYNNYCH						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Biotechnology and Microbiology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Patrycja Szumała				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	E-learning hours included: 0.0						
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2746 Moodle ID: 2746 TECHNOLOGIA ZWIĄZKÓW POWIERZCHNIOWO CZYNNYCH 2026/2027 https://enauczanie.pg.edu.pl/2025/course/view.php?id=2746						
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		10.0		45.0	100
Subject objectives	Theoretical and practical classes on obtaining surface-active compounds, their properties and possibilities of use in various detergent products. Learning about other ingredients of cleaning agents for use in households and industry.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K01] critically evaluates the content of cognitive and practical problems		Knows the problems associated with obtaining and using detergents; is able to produce ecological products		[SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce		
	[K7_U05] uses instrumental methods applied in technology and related fields		The student has in-depth knowledge of the technology of obtaining and analyzing surface-active compounds; is familiar with their properties in solutions and detergent preparations; knows the components of selected detergents and their action as well as production methods		[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU2] Ocena umiejętności analizy informacji		

Subject contents	Course content – lecture		
	1. Surfactants, their structure and types.		
	2. Physicochemical properties of surfactants and their solutions.		
	3. Technology for obtaining surface-active agents.		
	4. Anionic surfactants.		
	5. Cationic surfactants.		
	6. Amphoteric surfactants.		
	7. Nonionic surfactants.		
	8. Theories of detergents.		
	9. Components of selected detergent products and their action.		
	10. Methods of producing selected household chemical products.		
	11. Industrial detergents.		
	Course content – laboratory		
	1. Synthesis of Alkyl Sulfates		
	2. Tests Used in the Qualitative Determination of Surfactants		
	3. Analysis of the Properties of Fatty Alcohol Ethoxylates		
	4. Study of Selected Physicochemical and Functional Properties of Laundry Powders		
	5. Preparation of Detergent Products		
Prerequisites and co-requisites	Basic terms and definition on organic chemistry and selected analytical methods.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	60.0%
	Evaluation of laboratory tests and reports	100.0%	40.0%
Recommended reading	Basic literature	1. Zieliński R., Surfaktanty towaroznawcze i ekologiczne aspekty ich stosowania, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań, 2000.	
		2. Ogonowski J., Tomaszewicz-Potępa A., Związki powierzchniowo czynne, podręcznik dla studentów wyższych szkół technicznych, Politechnika Krakowska, Kraków 1999.	
		3. Gunstone F., Padley F., Lipid Technologies and Applications, Marcel Dekker Inc., New York, 1997.	
		4. Ho Tan Tai L., Formulating Detergents and Personal Care Products, AOCS Press, Champaign, Illinois, 2000.	
		5. Karsa D.R., Industrial Applications of surfactants III, The Royal Society of Chemistry, Wiltshire, 1992.	
		6. Tadros, T.F., Applied Surfactants, Wiley-VCH, Weinheim, 2005	
	Supplementary literature	1. Industry standards	
		2. Smulders E., Laundry Detergents, Wiley-VCH, Weinheim, 2002.	
		3. Hummel D.O., Handbook of Surfactant Analysis, John Willey and Sons Ltd, 2000.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Detergency theories		
	Synthesis of Sulphated Fatty Alcohols		

Practical activities within the subject	Not applicable
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