

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	Technology of Surfactants, PG_00038554								
Field of study	Chemical Technology								
Date of commencement of studies	February 2024		Academic year of realisation of subject			2024/2025			
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			3.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Faculty of Chemistry								
Name and surname	Subject supervisor		dr hab. inż. Patrycja Szumała						
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	15.0	0.0	15.0	0.0		0.0	30	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation in classes include plan		n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study 30 nours			5.0		40.0		75	
Subject objectives	Gaining theoretical and practical knowledge regarding the preparation of surfactants and their use in a variety of detergent products. Knowledge of other components of cleaners and detergents for use in households and industry.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K7_W08		Knows the problems related to obtaining and using detergents, knows how to design and obtain detergent products, including ecological ones			[SW3] Assessment of knowledge contained in written work and projects			
	К7_U09		Knows and identifies phenomena related to surface and interfacial activity and detergent theory; identifies surfactants and additional componets of detergents			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject			
Subject contents	<ul> <li>Surfactants; structure, classification and properties.</li> <li>Surface activity and surfactant structures.</li> <li>Anionic surfactants; soaps, alkyl sulfates, alkylaryl sulfonates, olefin sulfonates, secondary alkane sulfonates, sulfonated methyl esters of fatty acids and others surface active fatty acids derivatives.</li> <li>Cationic surfactants.</li> <li>Amphoteric surfactants.</li> <li>Nonionic surfactants; esters of polyols and fatty acids, products of the oxyethylation.</li> <li>Detergency theory and mechanisms.</li> <li>Common detergent ingredients.</li> <li>Representative detergent formulations.</li> </ul>								
Prerequisites and co-requisites	Basic terms and definition on organic chemistry and selected analytical methods.								
Assessment methods	Subject passing criteria		Passing threshold			Percentage of the final grade			
and criteria	Written exam		60.0%		60.0%				
	Evaluation of laboratory tests and reports		100.0%			40.0%			

Recommended reading	Basic literature	<ol> <li>Zieliński R., Surfaktanty towaroznawcze i ekologiczne aspekty ich stosowania, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań, 2000.</li> <li>Ogonowski J., Tomaszkiewicz-Potępa A., Związki powierzchniowo czynne, podręcznik dla studentów wyższych szkół technicznych, Politechnika Krakowska, Kraków 1999.</li> <li>Gunstone F., Padley F., Lipid Technologies and Applications, Marcel Dekker Inc., New York, 1997.</li> <li>Ho Tan Tai L., Formulating Detergents and Personal Care Products, AOCS Press, Chapaign, Illinois, 2000.</li> <li>Karsa D.R., Industrial Applications of surfactants III, The Royal Society of Chemistry, Wiltshire, 1992.</li> <li>Tadros, T.F., Applied Surfactants, Wiley-VCH, Weinheim, 2005</li> </ol>			
	Supplementary literature	<ol> <li>Rosen M.J., Goldsmith H.A., Systematic Analysis of Surface-Active Compounds, Willey-Interscience, New York, 1972.</li> <li>Smulders E., Laundry Detergents, Wiley-VCH, Weinheim, 2002.</li> <li>Hummel D.O., Handbook of Surfactant Analysis, John Willey and Sons Ltd, 2000.</li> </ol>			
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed	<ol> <li>Describe the steps involved in the washing process.</li> <li>Describe the composition of industrial detergents.</li> <li>Present the industrial production of sodium lauryl sulfate.</li> </ol>				
Work placement	Not applicable				

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