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 of lecturer (lecturers)	Subject supervisor	dr hab. inż. Patrycja Szumała	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
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 didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	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
K7_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

- Surfactants; structure, classification and properties.
- Surface activity and surfactant structures.
- 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.
- Cationic surfactants.
- Amphoteric surfactants.
- Nonionic surfactants; esters of polyols and fatty acids, products of the oxyethylation.
- Detergency theory and mechanisms.
- Common detergent ingredients.
- Representative detergent formulations.

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
Written 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., Tomaszkiewicz-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, Chapaign, 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. Rosen M.J., Goldsmith H.A., Systematic Analysis of Surface-Active Compounds, Willey-Interscience, New York, 1972. 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	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Describe the steps involved in the washing process. 2. Describe the composition of industrial detergents. 3. Present the industrial production of sodium lauryl sulfate.	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.