



## Subject card

Subject name and code	Degradation of Polymers, PG_00054583						
Field of study	Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study 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			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Polymers Technology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Janusz Datta				
	Teachers		prof. dr hab. inż. Janusz Datta				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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		15.0		50
Subject objectives	Understanding the processes of degradation of selected polymeric materials. Knowing the relationship between the chemical structure of the polymers and their resistance to degradation. Knowledge of methods to assess the degree of degradation and methods of increasing the resistance to degradation of polymeric materials.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W03	The student has in-depth knowledge of chemistry, polymer degradation, useful for solving problems in the field of materials science			[SW1] Assessment of factual knowledge		
	K7_U01	The student is able to obtain information from literature, also in English, and is able to draw conclusions and justify opinions			[SU2] Assessment of ability to analyse information		
	K7_W04	The student has in-depth knowledge in the field of materials science, has a basis for describing the relationship between the chemical composition, structure and properties			[SW1] Assessment of factual knowledge		
	K7_K01	The student understands the need to learn and is aware of their own limitations			[SK3] Assessment of ability to organize work		
Subject contents	The impact of physical factors on polymers. Characteristics of degradative processes occurring in the polymers under the influence of the chemical and physical factors that affect on them during use and storage. Thermo-oxidative degradation, photodegradation, irradiation, atmospheric degradation, hydrolytical degradation, biodegradation., mechanical degradation. Aids to prevent degradation of the polymers.						
Prerequisites and co-requisites	Basic knowledge of chemistry and technology of polymeric materials						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Final test		50.0%		100.0%		

Recommended reading	Basic literature	1. Praca zbiorowa, Tworzywa sztuczne w praktyce, red. J.T, Haponiuk, 2. J. Pielichowski, Puszyński A., Technologia tworzyw sztucznych, Wydawnictwa Naukowo-Techniczne, Warszawa 2003.3. red. Z. Florjańczyk, S. Penczek, Chemia polimerów, t. 1, 2, 3, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1998.4. E. Grzywa, J. Molenda, Technologia Podstawowych syntez organicznych, t. 1, t. 2, Wydawnictwa Naukowo-Techniczne, Warszawa 2000.5. K. Czaja, Poliolefiny, Wydawnictwa Naukowo-Techniczne, Warszawa 2005.
	Supplementary literature	The journal "Polymer Degradation and Stability"
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1.) How can the end products of polymer thermodegradation be identified?  2) Does the degradation of biopolymers differ from polymers? Present your answer on specific examples	
Work placement	Not applicable	