



Subject card

Subject name and code	Technology of Polymer Syntheses, PG_00061932						
Field of study	Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Polymer Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Łukasz Piszczyk				
	Teachers		dr hab. inż. Łukasz Piszczyk				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		5.0		35.0	100
Subject objectives	The aim of the course is to familiarize students with polymerization reactions and the technological methods used to produce polymer materials						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.		The student feels the need to enhance their skills and professional experience		[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work		
	[K6_U03] Can critically analyze and evaluate the functioning – particularly in the context of materials engineering –existing technical solutions, particularly equipment, objects, systems, processes.		The student is able to evaluate existing technological solutions used in materials engineering.		[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[K6_W03] Has knowledge of materials science and can relate the properties of materials with their structure and composition, knows the theoretical description of phenomena occurring in materials subjected to external factors.		The student has knowledge of materials science.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K6_U02] Can operate typical laboratory equipment and analyze material tests		The student conducts an analysis of materials testing using appropriate measuring equipment.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		

Subject contents	Course content – lecture - polycondensation, bulk polymerization, in situ polymerization, suspension polymerization, solution polymerization		
	Course content – laboratory Basic concepts: monomers, oligomers, natural and synthetic polymers, amorphous and crystalline polymers, polydispersity. Types of polymerization reactions. Radical polymerization, initiators, and chemical reactions occurring during chain initiation, growth, and termination. Coordination polymerization reactions occurring during chain initiation, growth, and termination. Ionic polymerization reactions occurring during the initiation, growth, and termination processes.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Passing the lecture	50.0%	60.0%
	Lab pass	50.0%	40.0%
Recommended reading	Basic literature	1. Praca zbiorowa pod redakcją Z. Floriańczyka i S. Penczka, Chemia polimerów tom 1. Makrocząsteczki i metody ich otrzymywania. Oficyna Wydawnicza Politechniki Warszawskiej, W-wa 1995. 2. Pielichowski J., Chemia polimerów, WNT Kraków 2004.	
	Supplementary literature	1. Jan F. Rabek, Współczesna wiedza o polimerach, PWN, Warszawa, 2008.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Discuss the methods of polyethylene synthesis. 2. Discuss radical polymerization using a specific polymer as an example. 3. Living polymerization. 4. Bulk polymerization vs. suspension polymerization list the main differences.		
Practical activities within the subject	Not applicable		

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