



Subject card

Subject name and code	Chemistry IV, PG_00048932						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2022/2023		
Education level	first-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	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		4.0		
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		dr hab. inż. Justyna Kucińska-Lipka				
	Teachers		dr hab. inż. Justyna Kucińska-Lipka dr inż. Maciej Sienkiewicz dr inż. Marcin Włoch dr inż. Ewa Głowińska dr inż. Paulina Parcheta-Szwindowska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		10.0		45.0	100
Subject objectives	The aim of the course is to acquaint the student with the basics of the chemical structure of specific groups of polymers of practical importance, the methods of their preparation and the basic properties.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K01		The student knows how to raise his own competences and knows when to turn to experts for help, is able to properly define priorities for the implementation of tasks set by himself or other.		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_U05		The student prepares theoretically for classes		[SU2] Assessment of ability to analyse information		
	K6_W02		The student has knowledge of physics and chemistry useful for solving problems related to the synthesis of polymers and the interpretation of their properties.		[SW1] Assessment of factual knowledge		
	K6_U01		The student is able to use analytical methods and devices that enable the measurement of basic quantities characterizing materials and synthesis processes.		[SU4] Assessment of ability to use methods and tools		
Subject contents	Basic concepts: monomers, oligomers, homopolymers, copolymers, terpolymers, polymer materials. Division of monomers and polymers. Types of polyreaction. Radical polymerization, initiators and chemical reactions taking place in the processes of chain initiation, growth and termination - kinetics. Polymers produced according to radical polymerization. Anionic polymerization of selected monomers. Polymers produced in anionic polymerization. Condensation polymerization: homopolycondensation, heteropolycondensation, copolycondensation and cross-linking polycondensation. Chemical reactions taking place in polycondensation processes leading to the obtaining of polymers of practical use.						

Prerequisites and co-requisites	There are no requirements.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory	100.0%	40.0%
	written colloquium	60.0%	60.0%
Recommended reading	Basic literature	Collective work edited by Z. Florjańczyk and S. Penczek: Chemistry of polymers, t1- Macromolecules and methods of their preparation, Oficyna Wydawnicza Politechniki Warszawskiej, Warsaw 1995. Pielichowski J., Puszyński A.: Chemistry of polymers, WNT Kraków 2004	
	Supplementary literature	W. C., Callister, Jr.: Materials Science & Engineering, 3rd Edition, John Wiley & Sons, New York 1994	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. What are polymers? 2. What is the difference between the polycondensation reaction and the polyaddition reaction? 3. How are monomers divided? 4. Obtain the selected polymer by at least two methods.		
Work placement	Not applicable		