



## Subject card

Subject name and code	Methods of Polymers Instrumental Analysis, PG_00039600						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject			2021/2022		
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 n/a		
Semester of study	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Polymers Technology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Łukasz Piszczyk					
	Teachers	dr hab. inż. Michał Strankowski dr hab. inż. Łukasz Piszczyk					
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	15.0	45
	E-learning hours included: 0.0						
	Metody analizy instrumentalnej polimerów - Moodle ID: 22266 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22266">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22266</a>						
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	5.0	25.0	75		
Subject objectives	The aim of the course is to teach the students new methods of polymers' instrumental analysis.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W05	Student is capable to choose proper techniques to solve engineering problems.			[SW1] Assessment of factual knowledge		
	K7_U01	Student knows the interpretation of instrumental analysis, student knows the literature concerning analysis of the polymers.			[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K7_K82] is equipped to participate actively in lectures, seminars and laboratory classes conducted in foreign language	Student knows methods for polymers analysis and knows how to interpret the results.			[SK2] Assessment of progress of work [SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		
	K7_W01	Student knows how to choose proper techniques to obtain desired information to solve the problem.			[SW1] Assessment of factual knowledge		
Subject contents	NMR, IR analysis, thermo-mechanical properties and morphology of the polymers.						
Prerequisites and co-requisites	Knowledge concerning mechanical and thermal properties of the polymers.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Lecture		60.0%		60.0%		
	Seminar		100.0%		40.0%		

Recommended reading	Basic literature	<p>1. Zieliński W.: Metody spektroskopowe i ich zastosowanie do identyfikacji związków organicznych, Wydawnictwo Naukowo-Techniczne, Warszawa 2001</p> <p>2. <a href="#">Gottfried W E.</a>, Materiały polimerowe. Struktura, właściwości zastosowanie, <a href="#">Wydawnictwo Naukowe PWN</a> , Warszawa 2016</p> <p>3. Rabek J. , Współczesna wiedza o polimerach, <a href="#">Wydawnictwo Naukowe PWN</a>, Warszawa 2008</p> <p>4. Pielichowski J., Chemia polimerów, Wydawnictwo WNT. Kraków 2004.</p>
	Supplementary literature	Journals Polimery, journals of ACS
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>1. Interpretation of NMR, IR spectra</p> <p>2. Analysis of DMTA, TGA, DSC data</p> <p>3. Analysis of polymers morphology using microscopy techniques</p>	
Work placement	Not applicable	