



## Subject card

Subject name and code	Polymer composites and biocomposites, PG_00060802						
Field of study	Chemical Technology						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2025/2026		
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			2.0		
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. Justyna Kucińska-Lipka					
	Teachers	dr hab. inż. Justyna Kucińska-Lipka dr inż. Marcin Włoch dr inż. Ewa Głowińska					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 4406 2025/2026 - Kompozyty i biokompozyty polimerowe <a href="https://enauzanie.pg.edu.pl/2025/course/view.php?id=4406">https://enauzanie.pg.edu.pl/2025/course/view.php?id=4406</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	30		2.0		18.0	50
Subject objectives	The aim of the course is to familiarize students with the production, properties and applications of polymer-based composites (including thermoplastic, thermosetting and elastomeric), including composites obtained using natural raw materials.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U11] individually plans and implements his/her own learning	The student is able to plan his/her own work, including selecting appropriate literature, research methods and techniques for a given material, including a polymer composite.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
	[K6_W09] has knowledge of the technological and functional properties of polymers, the physical basis and processing methods of polymers and rubber	The student has the necessary knowledge to describe the properties of polymer composites based on thermoplastic, thermosetting, and elastomeric polymers and is able to identify methods for their production.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
	[K6_K01] understands the need for continuing education, and is aware of the opportunities to improve professional, personal and social competences	Students recognize the importance of plastics production and processing as a rapidly developing industry and understand the need for continuous improvement of professional skills and lifelong learning.	[SK4] Assessment of communication skills, including language correctness
	[K6_U06] is able to select the chemical and technological concept of the production method, is able to justify the suitability of the raw materials used, analyses and evaluates the quality of the products obtained, critically analyses the functioning of existing technical solutions and evaluates these solutions	Student is able to select the raw materials necessary for the production and production method of a polymer-based composite or biocomposite for a specific application and justify their choice. Student can identify methods and techniques for characterizing the resulting material, including assessing its quality.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task
Subject contents	<p>Course content – lecture</p> <ul style="list-style-type: none"> <li>Raw materials used in the production of polymer composites and biocomposites: polymer matrices (thermoplastic, thermosetting, and elastomeric), powder and fibrous fillers (short fibers, long fibers, mats and fabrics), and auxiliary agents</li> <li>Methods for obtaining polymer composites and biocomposites</li> <li>Properties of polymer composites and biocomposites</li> <li>Methods for testing the properties of polymer composites and biocomposites</li> <li>Industrial applications of polymer composites and biocomposites</li> </ul> <p>Course content – seminar</p> <ul style="list-style-type: none"> <li>Student presentations on selected topics related to the production, properties, and applications of polymer-based composites and biocomposites.</li> <li>Discussions between students and the teacher, and between students, on selected topics related to the production, properties, and applications of polymer-based composites and biocomposites.</li> </ul>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture: written test	60.0%	55.0%
	seminar: attendance, preparation of presentation and presentation outline, active participation in the discussion	85.0%	45.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>W. Królikowski, Polimerowe kompozyty konstrukcyjne, PWN, Warszawa 2023</li> <li>A. Boczkowska, G. Krzesiński: Kompozyty i techniki ich wytwarzania, Wydawnictwo PW, Warszawa 2016</li> </ul>	
	Supplementary literature	<ul style="list-style-type: none"> <li>A.P. Wilczyński: Polimerowe kompozyty włókniste, WNT, Warszawa 1996</li> <li>J. Rabek: Polimery i ich interdyscyplinarne zastosowania, PWN, Warszawa 2020</li> </ul>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>List and characterize the types of polymer matrices in composites and biocomposites.</li> <li>List and characterize the types of powder and fibrous fillers.</li> <li>List and characterize the methods for obtaining polymer composites and biocomposites.</li> <li>List the methods for testing the morphology and properties of polymer composites and biocomposites.</li> <li>Provide examples of industrial applications of polymer composites and biocomposites and indicate which of their properties are key in a given applications</li> </ul>		
Practical activities within the subject	Not applicable		

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