



Subject card

Subject name and code	Polymer composites and biocomposites, PG_00060802						
Field of study	Chemical Technology						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
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						
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						
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_K01] Is aware of the social role of a technical university graduate and understands the need to provide information about technical achievements and engineering activities to society, including through the media.	is able to communicate, in a clear and appropriate manner, information regarding the production, properties, and applications of composites, as well as their significance for society, in both popular science and technical contexts.			[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness		
	[K6_U06] Recognizes the relationships between technological issues and their impact on the environment, taking into account the principles of sustainable development, systemic and non-technical aspects, and occupational health and safety principles	is able to describe the properties of polymer composites based on thermoplastic, thermosetting, and elastomeric polymers, and identify methods for their production. The student is able to select raw materials and manufacturing technologies for polymer-based composites or biocomposites suited to a specific application and justify the chosen options. They are also able to select methods and techniques for characterizing the resulting material, including assessing its quality.			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [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	<table border="1"> <thead> <tr> <th data-bbox="459 461 794 495">Subject passing criteria</th> <th data-bbox="802 461 1137 495">Passing threshold</th> <th data-bbox="1145 461 1481 495">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 506 794 528">lecture: written test</td> <td data-bbox="802 506 1137 528">60.0%</td> <td data-bbox="1145 506 1481 528">55.0%</td> </tr> <tr> <td data-bbox="459 539 794 629">seminar: preparation of presentation and presentation outline, active participation in the discussion</td> <td data-bbox="802 539 1137 629">85.0%</td> <td data-bbox="1145 539 1481 629">45.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	lecture: written test	60.0%	55.0%	seminar: preparation of presentation and presentation outline, active participation in the discussion	85.0%	45.0%
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Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>• W. Królikowski, Polimerowe kompozyty konstrukcyjne, PWN, Warszawa 2023</li> <li>• A. Boczkowska, G. Krzeziński: 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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