



Subject card

Subject name and code	, PG_00071261						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Division of Biomaterials Technology -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Bartmański					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 4904 Mikrokursy / Uczelnie Przyszłości / Michał Bartmański https://enauczanie.pg.edu.pl/2025/course/view.php?id=4904						
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	0.0		0.0	30	
Subject objectives	The aim of the course is to familiarize students with the properties and manufacturing methods of biomedical polymers and to prepare them for the informed selection of materials for implant applications, in accordance with technological and clinical requirements.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U10] is able to formulate the principles of selecting a material for a construction, ensuring the correct operation of a device	The student is able to select an appropriate polymer material for biomedical applications, taking into account its mechanical, biological, physicochemical, and operational properties, as well as the clinical and technological requirements of a given application.			[SU1] Assessment of task fulfilment		
	[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials	The student understands the structure and the physical, mechanical, and biological properties of polymers used in biomedicine, and is able to select and apply appropriate research methods to evaluate their suitability for the manufacture of implant components.			[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	<p>Course content – laboratory</p> <p>The course content focuses on the properties, selection, and processing technologies of polymers used in biomedicine, particularly in implantology. Students become familiar with the structure and characteristics of polymeric materials, their biocompatibility, degradation behavior, chemical and mechanical resistance, and their interaction with the biological environment. The criteria for material selection for specific clinical applications are discussed, taking into account functional, technological, and operational requirements.</p> <p>Students learn to apply research methods for assessing the suitability of materials for implant applications and to identify relationships between material properties and their structural use in the biological environment.</p>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	raport	56.0%	100.0%
Recommended reading	Basic literature	Review articles from the last five years published in journals such as <i>Biomaterials</i> , <i>Acta Biomaterialia</i> , and <i>Materials</i> . Biomaterials, ed. J. Marciniak, EXIT Academic Publishing House.	
	Supplementary literature	-	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Structure and classification of biomedical polymers. Mechanisms of polymer degradation in the biological environment. Mechanical properties of polymers and their significance in implantology. Chemical resistance and material aging under in vivo conditions.		
Practical activities within the subject	Not applicable		

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