



Subject card

Subject name and code	Biomaterials and materials of natural origin, PG_00061907						
Field of study	Materials Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
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	3	ECTS credits			1.0		
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	prof. dr hab. inż. Janusz Datta					
	Teachers	prof. dr hab. inż. Janusz Datta					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	To acquaint students with the current knowledge of available types of biomaterials of practical importance and polymers of natural origin						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U06] Can integrate obtained information, interpret it and draw conclusions, as well as formulate and justify opinions.		Students can analyze the properties of materials and draw conclusions		[SU2] Assessment of ability to analyse information		
	[K6_W08] Has fundamental knowledge of the development trends in the fields of science and scientific disciplines relevant to materials engineering.		The student gained actual knowledge of materials engineering Knows the direction of development from the field of IM		[SW1] Assessment of factual knowledge		
Subject contents	Biomaterials-definition and general properties. Discussion of groups of biomaterials: polymeric, carbon, composite, ceramic, and metallic. The most important areas of application of biomaterials. Quality criteria for biomaterials. Polymers of natural origin: natural rubber, cellulose, lignin, starch, proteins, proteins. Natural modified polymers: cellulose derivatives, starch derivatives. Technical vegetable oils. Application of natural polymers in industry, e.g. for water treatment. Biodegradation of natural polymers. Biopolymers - biodegradable polymers from natural monomers. Biopolyolefins						
Prerequisites and co-requisites	Basic knowledge of polymers and non-polymeric materials						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	written credit		50.0%		100.0%		
Recommended reading	Basic literature		Rabek J. F., Biopolimery, Wydawnictwo Naukowe PWN , Warszawa, 2022 Jozef T. Haponiuk and others, Natural Polymers: Perspectives and Applications for a Green Approach, Apple Academic Press, 2021 Jan Marciniak, Biomateriały,WPS,2002				

	Supplementary literature	Tondi Gianluca, Bio-Based Polymers for Engineered Green Materials. Mdpi Ag, 2021
	eResources addresses	Adresy na platformie eNauczenie: Biomateriały i polimery pochodzenia naturalnego - Moodle ID: 42526 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=42526
Example issues/ example questions/ tasks being completed	Indicate what vulcanization of natural rubber consists of Discuss ceramic biomaterials Is cellulose a natural polymer suitable for the modification process?	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.