GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Glasses and amorphous materials, PG_00039754		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
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
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Leszek Wicikowski	
	Teachers	dr inż. Leszek Wicikowski	

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	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	1.0	19.0	50

Subject objectives

The main aim is to present the fundamental of the glassy state including structure, methods of preparation and application of glassy materials

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W05	The student can describe the methods used in the study of amorphous materials. He can interpret the results obtained from X-ray diffraction and thermal analyzes concerning amorphous materials	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
K7_U01	The student can find source materials related to a topic and evaluate their quality.	[SU2] Assessment of ability to analyse information

Subject contents

Glassy state of matter. Glass transition. Viscisity.Glass formation criteria. Random network. Radial distribution function. Glassforming oxides and modificators. Structure of glass.Classification of inorganic oxide glasses. Crystallization processes and phase separation in glasses. Glass-ceramics Glass technology. Typical silicate, borate, phosphate and tellurite systems.

Prerequisites and co-requisites

Fundamental knowledge in physics and chemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Seminar	50.0%	50.0%
Colloquim	50.0%	50.0%

Recommended reading

Basic literature	R. H. Doremus Glass Science, Wiley 1973 J.E. Shelby, Introduction the glass science and technology, RSC 2005 A.K. Varshneya. Fundamentals of inorganic glasses, Academic Press
Supplementary literature	Additional materials (electronic version) from lecturer

	eResources addresses	
Example issues/ example questions/ tasks being completed	Glassy state of matter. Glass transition. Viscisity.Glass formation criteria. Random network. Radial distribution function. Glassforming oxides and modificators. Structure of glass.Classification of inorganic oxide glasses. Crystallization processes and phase separation in glasses. Glass-ceramics Glass technology. Typical silicate, borate, phosphate and tellurite systems	
Work placement	Not applicable	