GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065839		
Field of study	Materials Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Specialty 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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
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	prof. dr hab. inż. Janusz Datta	
	Teachers	prof. dr hab. inż. Janusz Datta	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	45

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	45	5.0	50.0	100

Subject objectives

Indication of work on a database of polymeric construction materials for the choice of optimal material and method of production of the technical product, stress analysis and creating technical elements at engineering drawings.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W06] Knows the theoretical basics the functioning of scientific equipment in the fields of science and scientific disciplines relevant to materials engineering.		
[K7_W01] Has extended knowledge of the fields of science and scientific disciplines relevant to materials engineering, and their historical development and importance for the progress of exact and natural sciences, knowledge of the world and evolution of humanity.	The student has knowledge in the field of materials engineering and recognizes its importance for the development of humanity.	[SW2] Assessment of knowledge contained in presentation
[K7_U04] Can undertake a detailed analysis of the obtained results and develop a technical report or presentation, also in English.	The student is able to analyze the obtained results and process them appropriately.	[SU2] Assessment of ability to analyse information
[K7_U03] Can formulate a research hypothesis, design an experiment needed to prove it and use properly selected measuring and laboratory methods.	The student is able to formulate a research hypothesis and plan an experiment to confirm it.	[SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Review of construction polymeric materials. Definition of property of engineering materials. Mechanical proprieties: critical coefficient intensities of tensions, logarithmic dekrement suppressions, coefficient of fatigue. Thermal proprieties: thermal conductivy, heat capacity, glass transition temperaure, melting temperature, resistance to thermal shocks, coefficient of leveling of temperature. Ways of presentations of properties of construction materials. Graphs of selection of material: Young Module- Density, Tensile Strength Density, Young Module Tensile Strength . Selection of material regardless the shape of section of manufactured product. Coefficients of functionality. Examples. Procedure for estimation of functionality coefficients. Maximalizing functionality criteria. Selection of polymeric materials for flexible construction parts. Shape coefficients. Functionality coefficients with regarding of shape. Examples. Methods of production and design. Production method influence on product design.
Course content – laboratory
Using a computer program to carry out an iterative process of selecting material for a specific product</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>General knowledge of polymeric materials. Basic knowledge of material strength and of technical drawing</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>test</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>tests + raports</td><td>100.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1)Ashby M.F., Dobór materiałów w projektowaniu inżynierskim, WNT, Warszawa 1998

2)Żuchowska D., Polimery konstrukcyjne, WNT, Warszawa 1995.

3)Ward J.M., Mechaniczne własności polimerów jako tworzyw konstrukcyjnych, PWN, Warszawa 1975.</td></tr>
<tr><td>Supplementary literature</td><td>Poradnik: Konstrukcje z tworzyw sztucznych, WEKA Sp.z.o.o.,Warszawa 2000.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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