GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physico-mechanical measurements, PG_00061918		
Field of study	Materials Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Polymer Technology -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Justyna Kucińska-Lipka	
	Teachers	dr hab. inż. Łukasz Piszczyk dr hab. inż. Michał Strankowski	

Lesson types and methods of instruction

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

eNauczanie source addresses:
Moodle ID: 1581 2025/2026 - Pomiary fizyko-mechaniczne - WYKŁAD / LABORATORIUM
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1581

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

Transfer of knowledge and skills in determining the physical and mechanical properties of materials: viscosity, density, hardness, mechanical properties under static and dynamic conditions and determining water content.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] has knowledge of physics and chemistry, useful for formulating and solving simple problems within the scope of materials science	The student is able to solve problems in the field of materials science (e.g. physical and rheological properties) using knowledge of chemistry and physics	[SW1] Assessment of factual knowledge
[K6_W06] Knows selected methods, techniques, tools and materials used in solving simple engineering problems within the scope of materials engineering.	The student uses measurement tools and techniques to solve tasks and problems in the field of materials engineering.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K6_U02] Can operate typical laboratory equipment and analyze material tests	The student uses typical research and laboratory equipment to analyze the physical and mechanical properties of materials.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.	The student is constantly learning to improve his/her professional and personal competences.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>Lecture: Physical and Mechanical Properties of Materials: Definitions, Basic Information on the Principles and Methods of Determining Physical and Mechanical Properties
Laboratory: Determination of physical and mechanical properties of materials, such as viscosity, viscoelastic properties, phase transition temperatures, crystallinity, thermal stability, thermal conductivity, hardness, resilience, impact strength, mechanical properties under static conditions (bending and compression), and determination of water content.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>Passing the laboratory</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Passing lectures</td><td>50.0%</td><td>50.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>• M. Blicharski., Wstęp do inżynierii materiałowej, Wydawnictwo Naukowo Techniczne, Warszawa 2001
• T. Broniewski, J. Kapko, W. Płaczek, J. Thomalla, Metody badań i ocena właściwości tworzyw sztucznych, Wydawnictwo Naukowo-Techniczne, Warszawa 2000.
• D. Żuchowska, Polimery Konstrukcyjne, Wydawnictwo Naukowo-Techniczne, Warszawa 2000.</td></tr>
<tr><td>Supplementary literature</td><td>• H. Galina, Fizyka materiałów polimerowych, makrocząsteczki i ich układy, Wydawnictwo Naukowo-Techniczne, Warszawa 2008.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. How to determine the density of foamed materials.
2. List the methods used to test materials.
3. Provide a definition of material strength.
4. Methods for determining the viscosity of macromolecular compounds.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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