GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065842		
Field of study	Materials Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Corrosion and Electrochemistry -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Szociński	
	Teachers	dr hab. inż. Michał Szociński	

Lesson types and methods of instruction

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

The aim is to present the influence of various degradation factors on the integrity of materials, deterioration of their functional properties, and to identify the degradation mechanisms, with a special emphasis on polymeric materials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] Can obtain information from literature, databases and other properly selected sources, also in English; can integrate the obtained information, interpret and draw conclusions, formulate and justify opinions	The student is able to identify types of operational hazards for various materials.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information
[K7_K02] Is aware of the importance of non-technical aspects and effects of engineering, including the influence on the environment and resulting responsibility for the decisions.	The student is able to assess the impact of degradation of a given material on the surroundings (natural environment, safety).	[SK5] Assessment of ability to solve problems that arise in practice
[K7_K01] Understands the need for lifelong learning, can inspire and organize the learning process of others. Is aware of own limitations and knows when to turn to experts, can accurately determine priorities helping to achieve the tasks specified by themselves or others.	The student is able to find information in professional literature about the degradation processes of various materials.	[SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>Topics:
1. Viscoelastic properties of polymer materials
2. Supermolecular structure of polymer materials
3. Polyreactions
4. Degradation of polymer materials
4.1 Thermal degradation
4.2 Oxidative degradation
4.2 Photochemical and radiation degradation
4.4 Biological degradation
5. Preventing degradation</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>The student has basic knowledge of organic chemistry, mathematics and corrosion.</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>presentation</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>1. Jan Rabek " Współczesna wiedza o polimerach"
2. Zbigniew Florianczyk, Stanisława Penczka "Chemia polimerów tom 1 , 2 i 3. "
3. Jan Pielichowski " Chemia polimerów"</td></tr><tr><td>Supplementary literature</td><td>Scientific papers in the field of material degradation.</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. Description of thermal degradation of polymers
2. Polymers susceptible to degradation by UV
3. Types of polymer degradation</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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