GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065829		
Field of study	Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
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	15.0	0.0	0.0	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	4.0	41.0	75

Subject objectives

Get to know the essence of the design of industrial processes plastics. Understanding the principles of project development process and technology. Acquainted with the operation and selection of industrial equipment in engineering plastics. Knowing the mass of the main production lines plastics. Understanding the principles of operation and control of industrial installations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W04] Has enhanced knowledge of materials sciences, within the scope required for describing and understanding the correlation between the chemical composition, structure and mechanical and physical properties.	Has adequate knowledge of materials and in particular is able to interpret the relationships between chemical composition, structure and mechanical and physical properties	[SW2] Assessment of knowledge contained in presentation
[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 understands the responsibility from the decisions made on engineering activities and their impact on the environment	[SK2] Assessment of progress of work
[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 obtain information from various sources and interpret it, draw conclusions and justify statements.	[SU2] Assessment of ability to analyse information

Subject contents

Course content – lecture

The essence of design processes The concept of chemical and technological process Selected achievements and directions of the development of modern industrial engineering plastics Quality management systems Issues of industrial property protection

Course content – laboratory

Preparation of a report providing a detailed analysis of the manufacturing technology of selected technical products (e.g., expanded polystyrene (EPS) panels for building facades), covering the chemical and technological concept of the process, a description of the individual stages of production, a mass and heat balance, an estimate of the cost of manufacturing 1 ton of product, the selection of basic equipment, and an analysis of the safety aspects of the process and product.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">General knowledge of polymer plastics. Knows the equipment and machinery used in the plastics industry, Fundamentals of heat and mass balance.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>elaboration, discussion</td><td>100.0%</td><td>50.0%</td></tr><tr><td>written exam</td><td>50.0%</td><td>50.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Synoradzki L., Wisialski J. (red.): Projektowanie procesów technologicznych. Od laboratorium do instalacji przemysłowej, Warszawa 2006 Synoradzki L., Wisialski J. (red.): Projektowanie procesów technologicznych. Bezpieczeństwo procesów chemicznych, Warszawa 2012 Szarawara J., Piotrowski J.: Podstawy teoretyczne technologii chemicznej, Warszawa 2010 Pikoń J.: Aparatura chemiczna , Warszawa 1983</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Bogoczek R., Kociołek-Balawejder E.: Technologia chemiczna organiczna. Surowce i półprodukty, Wrocław 1992 Florjańczyk Z., Penczek S. (red.): Chemia polimerów T.1. oraz T.2., Warszawa 2001 Rabek J.: Współczesna wiedza o polimerach, Warszawa 2008 Sikora R.: Przetwórstwo tworzyw wielkocząsteczkowych, Warszawa 1993</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. How does the seasoning (stabilization) of polystyrene granules work and why is it necessary?

2. How do process parameters determine the mechanical and insulating properties of the product?

3. Why is a mass balance performed in every technological process and what are its main applications?</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
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