GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00061829		
Field of study	Management and Production Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
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 Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Bartmański	
	Teachers		

Lesson types and methods of instruction

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

Subject objectives

Getting knowledge on application of materials engineering and nanotechnology in developing of advanced structural materials for manufacturing engineering.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] can obtain information from literature, databases and others sources, also in English or another foreign language recognized as the language of international communication in a given engineering discipline; is able to integrate the obtained information, interpret it, as well as draw conclusions and formulate and justify opinions.	The student is able to independently, using literature databases, find in scientific sources of information in the field of materials engineering.	[SU1] Assessment of task fulfilment
[K7_K01] is aware of the need to expand knowledge and verify the methods of solving problems by consulting experts	The student is able to identify the advantages and disadvantages of the material solution used in the field of production engineering and, on this basis, propose his own.	[SK5] Assessment of ability to solve problems that arise in practice
[K7_K02] is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made demonstrates knowledge of actions to reduce risk and anticipate the social impact of engineering and manufacturing activities	The student is able to assess the risks and environmental and safety impacts of the materials used in production engineering.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Groups of engineering materials. Use of materials engineering in manufacturing engineering. Selection of engineering materials. Genesis of nanotechnology and basic concepts. Different ways of perceiving nanotechnology, Forecasts of development of nanotechnology of engineering materials. Examples of engineering nanomaterials. Structural nanomaterials. The most important mechanical properties in applications of nanostructured engineering materials.

Prerequisites and co-requisites

Basic knowledege in the field of materials engineering

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Colloquium	56.0%	60.0%
	Laboratory	56.0%	40.0%
Recommended reading	Basic literature	1. K. Kurzydłowski, M. Lewandowska (Red), Nanomateriały inżynierskie, konstrukcyjne i funkcjonalne, Wydawnictwo Naukowe PWN, Warszawa, 2011 2. M. Kaczorowski, A. Krzyńska, Konstrukcyjne materiały metalowe, ceramiczne i kompozytowe, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2017. 3. K. Żelechowska (Red), Nanotechnologia w praktyce, Wydawnictwo Naukowe PWN SA, Warszawa, 2016	
	Supplementary literature	1. Kelsall R.W., Haley J.W., Geghegan M., Nanotechnologie, Wyd. PWN, Warszawa 2008; 2. Jurczyk M., Nanomateriały: wybrane zagadnienia. Wydaw. Politechniki Poznańskiej, 2001 3. M.Ashby, H.Shercliff, D.Cebon, Inżynieria materiałowa, T1, T2, Wydawnictwo Galaktyka, Łódź, 2011 4. Dobrzański L. A., Podstawy nauki o materiałach i metaloznawstwo. Materiały inżynierskie z podstawami projektowania materiałowego., WNT Warszawa, 2002 5. Blicharski M., Wstęp do inżynierii materiałowej, Wydawnictwo Naukowo Techniczne, Warszawa 2001 6. Głowacka M., Zieliński A., *Podstawy materiałoznawstwa* Praca zbiorowa, Politechnika Gdańska 2011	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Use of materials engineering in manufacturing engineering. 2. Construction of engineering materials 3. Definition of nanotechnology. 4. Basic properties of engineering nanomaterials.		
Work placement	Not applicable		