



Subject card

Subject name and code	, PG_00061829						
Field of study	Management and Production Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
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_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
	[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_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_W01] knows and understands to a greater extent selected issues in the field of management and quality sciences and mechanical engineering, their location in the field of social sciences and engineering and technical sciences, as well as relationships with related disciplines, and sees the possibility of applying the knowledge in practice.	The student is able to properly select the material for the tool / machine component.	[SW3] Assessment of knowledge contained in written work and projects	
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 knowledge in the field of materials engineering		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	56.0%	40.0%
	Colloquium	56.0%	60.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> 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. Zelechowska (Red), Nanotechnologia w praktyce, Wydawnictwo Naukowe PWN SA, Warszawa, 2016 	
	Supplementary literature	<ol style="list-style-type: none"> 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., <i>Podstawy metaloznawstwa</i> Praca zbiorowa, Politechnika Gdańska 2011 	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 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		