



## Subject card

Subject name and code	Designing and Selection of Materials, PG_00039925						
Field of study	Mechanical Engineering, Mechanical Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Optional 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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Materiałoznawstwa I Technologii Materiałowych -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Gabriel Strugała					
	Teachers	dr inż. Gabriel Strugała dr inż. Krzysztof Krzysztofowicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	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	6.0		14.0	50	
Subject objectives	Combining knowledge of basic subjects with their practical use in the process of selecting materials, taking into account the functions performed; the required characteristics of the material needed to manufacture the product. gaining the ability to critically analyze (validate) selected materials and choose the most optimal solution under strictly defined conditions.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U10] is able to formulate the principles of selecting a material for a construction, ensuring the correct operation of a device				[SU1] Assessment of task fulfilment		
	[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials				[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle				[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Lecture The function of material design in the processes of designing of products and their processing. Elements and phases of the engineering designing. The principles of the material selection the basic properties of the different classes of materials. The functional, sociological, ecological end economical indexes for material selection. Supporting systems and data bases. Case studies. Project Case studies regarding mechanical and thermal properite and corrosion resistance. Material selection cases with macro and microshaped. Independent solving of given design tasks.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		project	70.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Ashby M.F., Shercliff H., Cebon D.: Inżynieria materiałowa, tom 1 i 2, wyd. Galaktyka 2011</li> <li>2. Ashby M.F.: Dobór materiałów w projektowaniu inżynierskim. WNT. Warszawa 1998</li> <li>3. Ashby M.F., Jones D.R.H. Materiały inżynierskie - Właściwości i zastosowania - tom 1. WNT, Warszawa 1996</li> <li>4. Ashby M.F., Jones D.R.H. Materiały inżynierskie - Kształtowanie struktury i właściwości materiałów - tom 2. WNT, Warszawa 1998</li> <li>5. Dobrzański L.A.: Materiały inżynierskie i projektowanie materiałowe: podstawy nauki o materiałach i metaloznawstwo. WNT. Warszawa 2006</li> <li>6. Blicharski M. : Wstęp do inżynierii materiałowej. Wyd. II, WNT, Warszawa 1998</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Dobrzański L.A.: Zasady doboru materiałów inżynierskich: z kartami charakterystyk. Gliwice, Wydaw. Politechniki Śląskiej, 2000</li> <li>2. Marciniak J.: Biomateriały. Wyd. Pol. Śl. 2002</li> <li>3. <a href="http://www.grantadesign.com">http://www.grantadesign.com</a></li> </ol>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Analyze the functions (primary and secondary) performed by a crutch or a cane for a disabled person. Take into account age and estimated time of use. Identify the necessary characteristics of the materials. Determine material indicators. Conduct a critical analysis of potential materials. Make a choice and justify it.		
Work placement	Not applicable		