



Subject card

Subject name and code	Designing and selection materials of construction, PG_00050173						
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	Part-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Artur Sitko					
	Teachers	dr inż. Artur Sitko					
Lesson types and methods of instruction	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	8.0		62.0		100
Subject objectives	Knowledge of concepts and methods for selecting materials in practical applications. Understanding the relationship between design requirements and material properties.						
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	Student is able to analyze the material from the point of view of its function in specified application; identify the necessary material properties of the product; estimate their validity; determine material indices;			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials	Student defines the basic material groups; identifies the characteristics of each material groups; explains the differences in their properties based on their microstructure.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[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	Student knows manufacturing methods of materials from different material groups, as well as the conditions of their work, and is able to select the material correctly in a specified application.			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>The role of material design in the design of engineering products and their manufacturing processes. Components and phases of engineering design. Material selection rules - basic properties of each material groups. Functional, sociological, ecological and economic factors in the selection of materials. Selection Support Systems and Material databases. Selection examples.</p> <p>Examples of material selection in different applications due to their properties: mechanical, thermal, corrosion resistance, etc. Selection of materials according to the element shape in various practical applications. Self-solve your design tasks. Solving basic project tasks individually.</p>		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Colloquium - 1 hour: (50%)–3.0; (60%)–3.5;(70%)–4.0;(80)–4.5; (90%)–5.0	50.0%	50.0%
	Individual work must be completed correctly and submitted on time (2-5)	50.0%	50.0%
Recommended reading	Basic literature	<p>Basic literature1. Ashby M.F.: Dobór materiałów w projektowaniu inżynierskim. WNT. Warszawa 19982. Ashby M.F., Jones D.R.H.. Materiały inżynierskie - Właściwości i zastosowania - tom 1. WNT, Warszawa 19963. Ashby M.F., Jones D.R.H.. Materiały inżynierskie - Kształowanie struktury i właściwości materiałów - tom 2. WNT, Warszawa 19984. Dobrzański L.A.: Materiały inżynierskie i projektowanie materiałowe: podstawy nauki o materiałach i metaloznawstwo. WNT. Warszawa 20065. Blicharski M. : Wstęp do inżynierii materiałowej. Wyd. II, WNT, Warszawa 1998</p>	
	Supplementary literature	<p>Supplementary literature1. Dobrzański L.A.: Metalowe materiały inżynierskie. WNT, Warszawa, 2004 2. Dobrzański L.A.: Zasady doboru materiałów inżynierskich: z kartami charakterystyk. Gliwice, Wydaw. Politechniki Śląskiej, 2000</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie: Projektowanie i dobór materiałów konstrukcyjnych 2022/23 - Moodle ID: 27103 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=27103</p>	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Choose material for the construction of baby carriage. 2. Choose material for the computer radiator. 		
Work placement	Not applicable		