



Subject card

Subject name and code	Materials Selection of Design, PG_00039314						
Field of study	Medical and Mechanical Engineering, Medical and Mechanical Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			3.0		
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. Tomasz Seramak				
	Teachers		dr inż. Tomasz Seramak mgr inż. Łukasz Pawłowski				
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	5.0		40.0	75	
Subject objectives	Practical use of the acquired knowledge in basic subjects and its application in the process of selecting materials, taking into account the functions performed; the required characteristics of the material needed to manufacture the product. Acquiring 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_U09		Student consolidates knowledge from basic subjects and independently design or select engineering material		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W04		The student analyzes known construction materials in terms of their technical and medical properties		[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	<p>Lecture</p> <p>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 and economical indexes for material selection. Supporting systems and data bases. Case studies.</p> <p>Project</p> <p>Case studies regarding mechanical and thermal properite and corrosion resistance. Material selection cases with macro and microshaped. Independent solving of given design tasks</p>						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	project		70.0%		100.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Ashby M.F., Shercliff H., Cebon D.: Inżynieria materiałowa, tom 1 i 2, wyd. Galaktyka 2011 2. Ashby M.F.: Dobór materiałów w projektowaniu inżynierskim. WNT. Warszawa 1998 3. Ashby M.F., Jones D.R.H. Materiały inżynierskie - Właściwości i zastosowania - tom 1. WNT, Warszawa 1996 4. Ashby M.F., Jones D.R.H. Materiały inżynierskie - Kształowanie struktury i właściwości materiałów - tom 2. WNT, Warszawa 1998 5. Dobrzański L.A.: Materiały inżynierskie i projektowanie materiałowe: podstawy nauki o materiałach i metaloznawstwo. WNT. Warszawa 2006 6. Blicharski M. : Wstęp do inżynierii materiałowej. Wyd. II, WNT, Warszawa 1998
	Supplementary literature	<ol style="list-style-type: none"> 1. Dobrzański L.A.: Zasady doboru materiałów inżynierskich: z kartami charakterystyk. Gliwice, Wydaw. Politechniki Śląskiej, 2000 2. Marciniak J.: Biomateriały. Wyd. Pol. Śl. 2002 3. http://www.grantadesign.com
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>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.</p>	
Work placement	Not applicable	