GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Materials Selection of Design, PG_00039314		
Field of study	Medical and Mechanical Engineering, Mechanical and Medical 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 dr 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

Adresy na platformie eNauczanie:

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

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%	100.0%

Recommended reading	Basic literature	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 - Kształtowanie 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	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	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	