



Subject card

Subject name and code	Materials selection, PG_00053711						
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					
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	3	Language of instruction				English	
Semester of study	6	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
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	30.0	15.0	0.0	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	<p>Student knows methods which are used in materials selection.</p> <p>Student knows the role of limited lines, guidelines and Asby's diagrams in materials selection.</p> <p>Student can choose the best material which is used in specified application.</p>						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	K6_W03		Student has knowledge in the field of various materials used in industrial practice.			[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects	
	K6_W12		Student has knowledge regarding correct usage of literature.			[SW1] Assessment of factual knowledge	
	K6_U01		Student can use basic literature and stores information about materials which are necessary in their specified applications.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information	
	K6_U10		Student can formulate main principles connected with the function/-s, design constraint/-s, objectives as well as free variables ect. which are important in determining the material indexes used in materials selection.			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject	
Subject contents	Classification of material groups. Material properties. Key issues related to design process. Methods of materials selection in practical applications by using limited line/-es, guideline/-es on Ashby's diagrams. Basic issues connected with materials selection taking into account the shape of elements. Fundamental issues related to manufacturing process in the context of materials selection.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
			50.0%			100.0%	

Recommended reading	Basic literature	<p>M.F. Ashby, H.R. Shercliff, D. Cebon: Materials: engineering, science, processing and design. 4th edition, Butterworth Heinemann, Oxford, 2019.</p> <p>Mahmoud M. Farag: Materials and Process Selection for Engineering Design. 4th edition. Published December 30, 2020 by CRC Press.</p> <p>M.F. Ashby: Materials Selection in Mechanical Design. 5th edition, Butterworth Heinemann, Oxford, 2016.</p>
	Supplementary literature	<p>F.A.A. Crane, J.A. Charles: Selection and use of Engineering Materials. Butterworths. Boston, MA., 1984.</p> <p>Kamaraj M.: Basics of Surface Technology, New Academic Science, 2018.</p> <p>Kutz M. (Ed.): Handbook of Materials Selection. John Wiley & Sons Inc., New York 2002</p> <p>GRANTA EduPack (www.grantadesign.com/education). Software.</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	