GDAŃSK UNIVERSITY OF TECHNOLOGY

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

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12497

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

Student knows methods which are used in materials selection.

Student knows the role of limited lines, guidelines and Asby's diagrams in materials selection.

Student can choose the best material which is used in specified application.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W03	Student has knownledge 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 veriables 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

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td></td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>M.F. Ashby, H.R. Shercliff, D. Cebon: Materials: engineering, science, processing and design. 4th edition, Butterworth Heinemann, Oxford, 2019.

Mahmoud M. Farag: Materials and Process Selection for Engineering Design. 4th edition. Published December 30, 2020 by CRC Press.

M.F. Ashby: Materials Selection in Mechanical Design. 5th edition, Butterworth Heinemann, Oxford, 2016.</td></tr>
<tr><td>Supplementary literature</td><td>F.A.A. Crane, J.A. Charles: Selection and use of Engineering Materials. Butterworths. Boston, MA., 1984.

Kamaraj M.: Basics of Surface Technology, New Academic Science, 2018.

Kutz M. (Ed.): Handbook of Materials Selection. John Wiley & Sons Inc., New York 2002

GRANTA EduPack (www.grantadesign.com/education). Software.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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