GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Material Removal Processes, PG_00040169		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
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	1	Language of instruction	English
Semester of study	2	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Kazimierz Orłowski	
	Teachers	prof. dr hab. inż. Kazimierz Orłowski dr hab. inż. Daniel Chuchała dr inż. Agata Sommer	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	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	7.0	48.0	100

Subject objectives

Giving basic knowledge concerning manufacturing technologies with special consideration to cutting processes and machine tools.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W03	Knows the basic types of tool materials and their application in machining processes	[SW1] Assessment of factual knowledge
K6_U04	Can select correct cutting process parameters using catalogues of cutting tools for a given set of workpiece material and cutting edge material.	[SU2] Assessment of ability to analyse information
K6_W08	Can select the correct machining process for the given type of element being manufactured	[SW1] Assessment of factual knowledge

Subject contents

LECTURE: Geometric and kinematic parameters of cutting. Movements of tools and workpieces during machining. Geometry of a cutting tool analysed in tool-in-hand system and in tool-in-use system. Geometryof cut. A phenomeon of chip formation and kinds of chips. Heat and temperature in cutting area. Coolantand lubricant agents. Wear of cutting tools. Force and power during machining. Vibrations during cutting.Tool materials and rules of their selection. Basic ways of cutting: turning, milling, drilling, deepening, boring.Abrasive machining. LABORATORY: Parting-off materials and machine-tools for cutting-off. Machining onlathes. Machining on drilling machines. Machining on milling machines. Machining of toothed gear-wheels.Machining on grinding machines. Cutting on planning machines and vertical shapers.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2"></td></tr>
<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>Written exam</td><td>56.0%</td><td>90.0%</td></tr>
<tr><td>Laboratory</td><td>100.0%</td><td>10.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. GRZESIK Wit. Advanced Machining Processes of Metallic Materials. Theory, Modelling, and Applications. 2nd Edition, ELSEVIER, Amsterdam 2017

2. ASM Handbook, Volume 16, Machining. ASM International. Handbook Committee. 1989

3. Childs, T., Maekawa, K., Obikawa, T., Yamane, Y.. Metal Machining. Theory and Applications. ARNOLD, London 2000</td></tr>
<tr><td>Supplementary literature</td><td>1. Kalpakjian Serope, Schmid Steven. Manufacturing Engineering & Technology (7th Edition), Published by Pearson, 2014.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Material Removal Processes; W/L; DaPE; 1st grade, 2nd semester, Summer 22/23 (M:32002W0) - Moodle ID: 28575
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28575</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Final test consists of many questions that are related to all subsubjects.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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