GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Material Removal Processes, PG_00040044		
Field of study	Mechanical Engineering, 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	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
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	dr hab. inż. Daniel Chuchała dr inż. Bogdan Ścibiorski dr inż. Sławomir Szymański dr inż. Wojciech Blacharski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	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

Provision of basic knowledge about manufacturing techniques, with particular emphasis on machining processes as well as machine tools.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student knows the basic types of construction materials and their machinability properties, which allows him to correctly select the material of the cutting tools implementing the machining process.	[SW1] Assessment of factual knowledge
[K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating basic values describing the operation of mechanical systems, knows basic calculating methods applied to analyse the results of experiments	The student selects the appropriate technologies and tools for implementation of the manufacturing process depending on the type workpiece material.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U04] is able to perform a critical analysis of the existing technical solutions, present the specification of the technology of manufacturing basic construction elements of machines and engineering assemblies	The student is aware of the effect of various factors externalities on the quality and efficiency of the process manufacturing. He knows the basic threats caused by errors during the manufacturing process.	[SU3] Assessment of ability to use knowledge gained from the subject

<table>
<tr><td>Subject contents</td><td>LECTURE Geometric and kinematic parameters of cutting. Tool and workpiece movements. The geometry of the cutting blades in the tool and working system, the geometry of the cut layer. The phenomenon of chips formation and types of chips. Heat and temperature in the cutting zone. Cooling and lubricating agents. Wear cutting tools. The quality of the processed surface. Cutting force and power. Vibration in the process machining. Tool materials and rules for their selection. Basic machining methods: turning, milling, drilling, countersinking, reaming. Abrasive processing.LABORATORY: Cutting materials and cutting machines. Machining on lathes. Machining on drills. Machining on milling machines. Machining of gears. Machining on grinders. Machining on planers and slotters</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>There are no requirements</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory exercises</td><td>100.0%</td><td>30.0%</td></tr>
<tr><td>Final exam</td><td>60.0%</td><td>70.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Cichosz P.: Narzędzia skrawające. WNT, Warszawa 2006.2. Olszak W.: Obróbka skrawaniem. WNT, Warszawa 2008.3. Grzesik W. Podstawy skrawania materiałów konstrukcyjnych(Wydanie 3), PWN 2018.4. Storch B. Podstawy obróbki skrawaniem. Politechnika Koszalińska2001.5. Poradnik obróbki skrawaniem (Toczenie - frezowanie - wiercenie -wytaczanie - systemy narzędziowe). Sandvik - Coromant, 2010.</td></tr>
<tr><td>Supplementary literature</td><td>1. Jemielniak K.: Obróbka skrawaniem. Oficyna Wyd. PolitechnikiWarszawskiej, Warszawa 1998.2. Kalpakjian Serope, Schmid Steven. Manufacturing Engineering &Technology (7th Edition), Published by Pearson, 2014.3. Websources</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>1) Effect of the built-up-edge on the machining process. 2) Carbide as a tool material. 3) Construction of a lathe universal. 4) Machining technology of hole in fine tolerance H7</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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