GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00059218		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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	exam
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Daniel Chuchała	
	Teachers		

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	10.0	35.0	75

Subject objectives

The aim of subject is lern and understand basic manufacturing techniques, especially with the dominanttechnique in the world's manufacturing processes, i.e. machining. Understanding the phenomenon of chipformation and the parameters of cutting processes for various types of chip machining. The student will alsobecome lern with the construction and application of cutting tools and the types of materials used tomanufacture these tools.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U03	The student is able to interpret the reasons for the obtained quality of machined surfaces and the reasons for wear of cutting tools.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
K6_K01	The student is able to use correct nomenclature to obtain reliable information about the manufacturing process under analysis.	[SK4] Assessment of communication skills, including language correctness
K6_U06	The student is able to navigate the basics of manufacturing processes.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
K6_W05	The student is able to determine whether a given main drive unit is sufficient to carry out selected machining processes. The student knows the ways of controlling movements and positions of cutting tools (mechanical and electronic) applied on conventional and numerical machine tools.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td colspan="3">LECTURE: Geometric and kinematic parameters of machining. Movements of the tool and theworkpiece.Geometry of the blades in the tool arrangement and work arrangement, geometry of the cuttinglayer. Thephenomenon of chip formation and types of chips. Heat and temperature in the cutting zone.Cooling andlubricating agents. Wear of cutting tools. Strength and cutting power. Vibrations in the cuttingprocess. Toolmaterials and rules for their selection. The basic methods of machining: cutting, turning, boring,milling,planing, machining of gears e.t.c. Abrasive machining.LABORATORY: Sawing materials and sawingmachines. Machining on lathes. Machining on drills. Machining on milling machines. Machining on planersand slotting machines. Machining of gears. Machining on grinders.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><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>10.0%</td></tr>
<tr><td>Final test</td><td>56.0%</td><td>90.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">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), PWN2018.4. 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 colspan="2">1. Jemielniak K.: Obróbka skrawaniem. Oficyna Wyd. PolitechnikiWarszawskiej, Warszawa 1998.2. Kalpakjian Serope, Schmid Steven. Manufacturing Engineering &Technology (7th Edition), Published by Pearson, 2014.</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">The final test contains a number of questions relating to topics throughout the course, e.g. the kinematic parameters of the borehole drilling process</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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