



Subject card

Subject name and code	Manufacturing techniques 1, PG_00042005						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021				
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery	at the university				
Year of study	1	Language of instruction	Polish In the case of lectures by visiting professors, lectures may be conducted in English language				
Semester of study	2	ECTS credits	4.0				
Learning profile	general academic profile	Assessment form	assessment				
Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Daniel Chuchała					
	Teachers	dr hab. inż. Daniel Chuchała dr inż. Aleksandra Suchta prof. dr hab. inż. Kazimierz Orłowski					
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						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10120 Adresy na platformie eNauczanie: Techniki Wytwarzania I; Energetyka; 1 stopień, 2 semestr (PG_00042005)Lato 2021 - Moodle ID: 10120 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10120						
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	3.0	67.0	100		
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_W06	The student selects the appropriate technologies and tools for implementation of the manufacturing process depending on the type workpiece material.	[SW1] Assessment of factual knowledge				
	K6_K02	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.	[SK1] Assessment of group work skills				
Subject contents	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						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final exam	60.0%	70.0%
	Laboratory exercises	100.0%	30.0%
Recommended reading	Basic literature	<p>1. Cichosz P.: Narzędzia skrawające. WNT, Warszawa 2006.</p> <p>2. Olszak W.: Obróbka skrawaniem. WNT, Warszawa 2008.</p> <p>3. Grzesik W. Podstawy skrawania materiałów konstrukcyjnych(Wydanie 3), PWN 2018.</p> <p>4. Storch B. Podstawy obróbki skrawaniem. Politechnika Koszalińska2001.</p> <p>5. Poradnik obróbki skrawaniem (Toczenie - frezowanie - wiercenie - wytaczanie - systemy narzędziowe). Sandvik - Coromant, 2010.</p>	
	Supplementary literature	<p>1. Jemielniak K.: Obróbka skrawaniem. Oficyna Wyd. PolitechnikiWarszawskiej, Warszawa 1998.</p> <p>2. Kalpakjian Serope, Schmid Steven. Manufacturing Engineering &Technology (7th Edition), Published by Pearson, 2014.</p> <p>3. Websources</p>	
	eResources addresses	<p>Techniki Wytwarzania I; Energetyka; I stopień, 2 semestr (PG_00042005)Lato 2021 - Moodle ID: 10120 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10120</p>	
Example issues/ example questions/ tasks being completed	<p>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</p>		
Work placement	Not applicable		