



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 Chuchala				
	Teachers		dr hab. inż. Daniel Chuchala 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; I 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	<p>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.</p> <p>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</p>						

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	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.	
	Supplementary literature	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	
	eResources addresses	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	
Example issues/ example questions/ tasks being completed	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		
Work placement	Not applicable		