

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

	DC 00052018									
Subject name and code	, PG_00062018									
Field of study		a Engineering		-						
Date of commencement of studies	October 2023		Academic year of realisation of subject			2025/2026				
Education level	first-cycle studies		Subject group							
Mode of study	Part-time studies		Mode of delivery			at the university				
Year of study	3		Language of instruction			Polish				
Semester of study	6		ECTS credits			8.0				
Learning profile	general academic profile		Assessment form			assessment				
Conducting unit	Zakład Technologii Maszyn i Automatyzacji Produkcji -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology							ls Technology		
Name and surname	Subject supervisor		dr hab. inż. Daniel Chuchała							
of lecturer (lecturers)	Teachers									
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	aboratory Project		Seminar	SUM		
of instruction	Number of study hours	36.0	0.0	9.0	18.0		0.0	63		
	E-learning hours included: 0.0									
Learning activity and number of study hours	Learning activity	ng activity Participation in classes includ plan		Participation in consultation hours		Self-study		SUM		
	Number of study 63 nours			0.0		0.0		63		
Subject objectives	The aim of the course is to familiarise the student with the basic construction, principle of operation, handling and programming of CNC machine tools.									
Learning outcomes	Course out	Course outcome Subject outcome Method of veri					fication			
	[K6_W08] has a knowledge of the analysis and design of selected technical systems, machines and technical equipment, selection of construction materials, manufacturing and operation, including their life cycle		Can select the basic components to design a machine tool drive			[SW1] Assessment of factual knowledge				
	[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools		The student is able to read the technical - commissioning documentation of a CNC machine tool, in order to prepare and carry out the necessary maintenance tasks on the machine tool			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject				
	[K6_W11] has knowledge of analysis, design, technology and manufacturing of selected technical systems, machinery and equipment, metrology and quality control, knows and understands methods of measurement and calculation of basic quantities describing the operation of technical systems, knows basic calculation methods used to analyse experimental results		The student is able to select the machining parameters necessary for programming and implementation of CNC machining			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects				
	[K6_U14] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria		Students will be able to select a machine tool to meet the needs of the planned production of a mechanical component based on the basic design of CNC machine tools.			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information				

Subject contents								
	LectureFundamentals of construction and operation of selected CNC machine tools. Basic CNC controllers and their programming languages. Construction of a CNC machining programme. Basic programming in ISO- Code (G-Code). Basic programming in Heidenhain. List of requirements for drives of modern machine tools. Classification, basic features and range of applications of modern drives with electric motors. Definition and structure of a servo drive.LaboratoryConventional technological machines and with CNC control. Experimental determination of technological bases on a CNC milling machine. Tool length measurement on a CNC milling machine. Linear and circular interpolation during the CNC milling process.ProjectProject of the machining process for a selected mechanical component. Selection of machine tool, tools, parameters and writing CNC code for the designed machining.							
Prerequisites and co-requisites	Basic machining, strength of materials, fundamentals of machine design and materials science are required							
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade					
and criteria	Project	56.0%	30.0%					
	L aboratory	100.0%	30.0%					
		56.0%	40.0%					
Recommended reading	Basic literature	1. Jemielniak K.: Automatyczna dia skrawania. Oficyna Wydawnicza P	1. Jemielniak K.: Automatyczna diagnostyka stanu narzędzia i procesu skrawania. Oficyna Wydawnicza Poli. Warsz. 2002.					
		 Kosmol J.: Serwonapędy obrabiarek sterowanych numerycznie. WNT1998. Honczarenko J.: Obrabiarki sterowane numerycznie. WNT Warszawa 2008 						
		4. Grzesik W., Nlesłony P., Kiszka P.: Programowanie obrabiarek CNC. PWN Warszawa, 2020.						
	Supplementary literature	1. Users Manual HEIDENHAIN Co	onversational TNC 640, 4, 2012					
		 Lathe Operators Manual. December 2018, English, Original Instructions, Haas Automation Inc., U.S.A. HaasCNC.com Kaushik Kumar, Chikesh Ranjan, J. Paulo Davim. CNC Programming for Machining. Springer International Publishing, 1stEdition, 2020, p.136. DOI: 10.1007/978-3-030-41279-12. Fundamentals of CNC Machining. A Practical Guide for Beginners. Compliments of Autodesk, Inc. USA, 20145. Graham T. Smith. CNC Machining Technology. Volume 3: Part Programming Techniques. Springer-Verlag London, 1993, p. 137. DOI: 						
Example issues/	eResources addresses Write a part of a program describir	Adresy na platformie eNauczanie: g the peripheral machining process of the contour shown on the drawing						
example questions/		3 and book many of						
tasks being completed								

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