



Subject card

Subject name and code		Advanced Technological and Control Devices, PG_00055489						
Field of study		Mechanical Engineering						
Date of commencement of studies		October 2021	Academic year of realisation of subject			2023/2024		
Education level		first-cycle studies	Subject group			Optional subject group 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		3	Language of instruction			Polish		
Semester of study		5	ECTS credits			4.0		
Learning profile		general academic profile	Assessment form			assessment		
Conducting unit		Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)		Subject supervisor		dr inż. Michał Dobrzyński				
		Teachers		dr inż. Michał Dobrzyński dr inż. Aleksandra Laska				
Lesson types and methods of instruction		Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
		Number of study hours	30.0	0.0	15.0	0.0	0.0	45
		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	45	6.0		49.0	100	
Subject objectives		The aim of the course is to familiarize students with modern technological and measuring devices used in production plants and the trends in their development.						
Learning outcomes		Course outcome	Subject outcome			Method of verification		
		[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 listener will be able to evaluate the existing technical solutions in production plants. The student will understand the need to adapt technology to changing trends.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
		[K6_U08] is able to design a technological manufacturing process for typical elements of machines or devices, using analytical and numerical calculating tools	The student will be able to design a technological process using advanced technological and measuring devices.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information		
		[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 will have knowledge in the field of design, technology and production of machine parts, metrology and quality control with the use of advanced technological and measuring means.			[SW1] Assessment of factual knowledge		
		[K6_U09] is able to plan the manufacturing, assembly and quality control processes of typical constructions and mechanical devices, estimating their costs	The student will be able to plan the process of manufacturing, assembly and quality control of typical structures and mechanical devices, estimating its costs			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information		

Subject contents	<p>Advanced means and production technologies. Digital and green factory. Intelligent production. Advanced measuring devices and systems. Statistical Process Control (SPC).</p> <p>Development of a programs with the use of advanced means of CNC manufacturing and coordinate measuring machines (CMM)</p>		
Prerequisites and co-requisites	Knowledge of technological processes, metrology, automation and robotization.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	60.0%	40.0%
	Written exam	60.0%	60.0%
Recommended reading	Basic literature	<p>1. E. Ratajczyk: Współrzędnościowa technika pomiarowa. OWPW, Warszawa 20052. Piotr Kiszka, Piotr Niestony, Wit Grzesik: Programowanie obrabiarek CNC. PWN Warszawa 2020.3. Hybrydowe metody obróbki materiałów konstrukcyjnych. PWN Warszawa 2021.4. Wacław Skoczyński: Sensory w obrabiarkach CNC. PWN Warszawa 2018.</p>	
	Supplementary literature	<p>Jacek Domińczuk, Gabriel Kost, Piotr Łebkowski: Automatyizacja i robotyzacja procesów produkcyjnych. PWE Warszawa 2021. Jerzy Honczarenko: Elastyczna automatyzacja wytwarzania. WNT Warszawa 2021. Tadeusz Mikulczyński, Zdzisław Samsonowicz, Rafał Więclawek: Automatyizacja procesów produkcyjnych. WNT Warszawa 2021.</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Zaawansowane urządzenia technologiczne i kontrolne, W, MiBM, sem. 5, zimowy 2023/2024 - Moodle ID: 34226 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34226</p> <p>Zaawansowane urządzenia technologiczne i kontrolne, W, MiBM, sem. 5, zimowy 2023/2024 - Moodle ID: 34226 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34226</p>	
Example issues/ example questions/ tasks being completed	Sensors of a milling machining center.		
Work placement	Not applicable		