GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Advanced measuring systems, PG_00059377		
Field of study	Mechanical Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Dobrzyński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	9.0	0.0	9.0	0.0	0.0	18

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	18	6.0	51.0	75

Subject objectives

The aim of the course is to familiarize students with advanced measuring devices used inproduction plantsand the trends in their development.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U07] is able to perform a preliminary economic analysis of the undertaken engineering actions within the range of design, production and operation of machines and technical devices	The student will be able to design a process using advanced measurement techniques and apparatus.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K7_W06] possesses organized, profound knowledge necessary for designing and optimization of complex technological processes, modelling and calculations using numerical methods, knows modern manufacturing methods and tools for designing manufacturing processes of machines, devices, their elements and components	The student will have knowledge in the field of designing measurement processes and their optimization and alignment.	[SW1] Assessment of factual knowledge
[K7_W07] possesses profound knowledge on the diagnostics and monitoring of the condition of devices, assemblies and technical systems, as well as measurement methods of process and operation control	The student will have knowledge in the field of metrology and quality control with the use of advanced measuring means.	[SW1] Assessment of factual knowledge

Subject contents

Advanced measuring devices and systems. Vision Measuring Systems (2D/3D). Form Measurement(Surface Roughness and Contour Measuring Instruments). Advanced Optical Measuring Systems (focusvariation, interferometry, confocal techniques). Development of a programs with the use of coordinatedmeasuring machines (CMM). Advanced systems for measuring mechanical properties (e.g., nanoindentation).

Prerequisites and co-requisites

Metrology

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	60.0%
	Lab test	50.0%	40.0%
Recommended reading	Basic literature	E. Ratajczyk: Współrzędnościowa technika pomiarowa. OWPW,Warszawa S. Białas: Metrologia z podstawami specyfikacji geometrii wyrobów (GPS). OWPW, Warszawa M. Kot, W. Rakowski, J. Łyźniak, Modelling and Experimental Verification of Nanoindentation Tests on Coating-Substrate Systems = Modelowanie i eksperymentalna weryfikacja testów nanoindentacji dla układów powłoka-podłoże.	
	Supplementary literature	W. Jakubiec: Metrologia wielkości geometrycznych. PWN	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Coordinate measuring technique. ISO profile method. Olivier - Pharr model in indentation studies		
Work placement	Not applicable		