

SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

Subject card

Subject name and code	Technical and computer metrology, PG_00055745								
Field of study	Mechanical and Medical Engineering								
Date of commencement of studies	October 2021		Academic year of realisation of subject		2021/2022				
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study				
						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	1		Language of instruction			Polish			
Semester of study	2		ECTS credits			5.0			
Learning profile	general academic pr	ofile	le Assessment form			exam			
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						
			mgr inż. Karolina Miętka						
		mgr inż. Anna Janeczek							
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	roject Semi		SUM	
	Number of study hours	30.0	15.0	30.0	0.0		0.0	75	
	E-learning hours included: 0.0								
	Adresy na platformie eNauczanie:								
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	75		6.0		44.0		125	
Subject objectives	Recognition with the basic principles of metrology and preparing to conduct measurements of mechanicalsizes with the analysis of the results. Rules for determining the accuracy, tolerate and fits of machine parts. Knowledge of the methods of measurement and measuring instruments.								

Learning outcomes	Course outcome	Subject outcome	Method of verification				
	[K6_U10] he/she is able to assess the human body physic and basic functioning of the body organs, he/ she is able to use basic medical knowledge to solve mechanical- medical problems in the scope of the MME study	The student selects the appropriate measuring instrument to measure a given quantity measured with the use of CNC measuring systems. The student conducts simulation analyzes, prepares a measurement program in a computer environment, and takes measurements. The student analyzes the results of the measurements. Student calculates measurement errors.	[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_W12] he/she has basic knowledge in the field of fundamental medical sciences, human body anatomy, and physiology, salvage service	Student recognizes mechanical quantities subject to measurement. Determine measurement methods and systems. The student has knowledge of methods, errors and measurement uncertainty, Geometrical Product Specifications (GPS) and assessment of their accuracy.	[SW1] Assessment of factual knowledge				
	[K6_K02] he/she is aware of importance of professional dealing and to fulfill ethics obligations, he/ she understands other (non- technical) abilities of mechanical engineering professional, their influence on the society and security of environment, he/she is aware of importance of social cooperation	Student explains construction and principle of operation of measurement instruments. Student chooses suitable measuring instrument for measure given quantity. Student measures.	[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills [SK2] Assessment of progress of work				
Subject contents	Basic concepts in metrology: measurement, units of measurement, standards and instruments. Accuracyand uncertainty. The geometrical structure of the product (Geometrical Product Specifications - GPS). Basics of tolerances, deviations and fits. Geometric tolerances. General Tolerances - Tolerances for linearand angular dimensions without individual tolerance indications. Fundamentals of measurements (repeatability and reproducibility of a measuring device). Surface texture. Metrological methods andequipment and principles of its selection. Laboratory: Measurements of external, internal, mixed andintermediate dimensions. Measurement of angles, cones,. Measurements of surface texture and contours. Measurements with the use of altimeters. 2D measurements. Coordinate measuring technique (manual andCNC measuring machines). Tutorials: Measurements and their uncertainty (Measurement errors, uncertainty, uncertainty budget and statistical analysis of measurement results). Tolerances and fits. Dimensional chains. Tolerance of component dimensions interchangeability. Thread tolerance						
Prerequisites	Basic knowledge of technical drawing						
Assessment methods		Dessing threshold	Democratory of the final anada				
and criteria	Subject passing criteria						
		60.0%	20.0%				
		60.0%	30.0%				
Recommended reading	Basic literature	iterature 1. W. Jakubiec, J. Malinowski: Metrologia wielkości geometrycznych.WNT, Warszawa 2018.2. S. Białas, Z. Humienny, K. Kiszka: Metrologia z podstawamispecyfikacji geometrii wyrobów (GPS). Oficyna wydawnicza PW,Warszawa 2014.3. S. Adamczak, W. Makieła: Metrologia w budowie maszyn. WNT,Warszawa 20214. T. Sałaciński: Ćwiczenia laboratoryjne z metrologii. Oficynawydawnicza PW, Warszawa 2015.5. T. Sałaciński: Elementy metrologii wielkości geometrycznych.Przykłady i zadania. Oficyna wydawnicza PW, Warszawa 2013.					
	Supplementary literature 1. E. Ratajczyk: Współrzędnościowa technika pomiarowa. OWPW,Warszawa 20052. J. Jezierski: Analiza tolerancji i niedokładnościpomiarów w budowie maszyn. WNT Warszawa 20033 A. Boryczko:Podstawy pomiarów wielkości mechanicznych. Wydawnictwo PG,Gdańsk 20104. A. Meller, P. Grudowski: Laboratorium metrologiiwarsztatowej i inżynierii jakości. http:// www.wbss.pg.gda.pl ,podręczniki(format PDF)						
	eResources addresses						
Example issues/ example questions/ tasks being completed	Types of fit machine parts and their uses? Classification of measurement errors? Presentationofmeasurement methods.						
Work placement	Not applicable						