

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	, PG_00059978							
Field of study	Environmental Engineering							
Date of commencement of studies	February 2025		Academic year of realisation of subject			2025/2026		
Education level	second-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			3.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Faculty of Civil and Environmental Engineering							
Name and surname	Subject supervisor dr hab. inż. Piotr Zima							
of lecturer (lecturers)	Teachers	1						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Project	t	Seminar	SUM
of instruction	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 ir classes includ plan		n didactic Participation in ed in study consultation hours		Self-study SUM			
	Number of study hours	45		5.0		30.0		80
Subject objectives	To acquaint students State Environmental	with the techni Monitoring.	ques and meas	suring devices	used in	sanitary	y engineering	. Objectives of
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K7_W05		The student is able to use knowledge of surveying in construction and determine their impact on the environment.			[SW1] Assessment of factual knowledge		
	K7_U02		The student is able to solve problems related to measurements while working in a team.		[SU1] Assessment of task fulfilment			
	K7_W03		The student has in-depth, structured and theoretically based knowledge related to environmental measurement, management and monitoring.			[SW1] Assessment of factual knowledge		
	K7_U07		The student is able to plan and conduct an experiment or laboratory or field study leading to the assessment of the effectiveness of the solutions used in environmental engineering.			[SU4] Assessment of ability to use methods and tools		
	[K7_U08] is able to assess risks in the implementation of engineering projects and implement appropriate safety rules		The student is able to assess the threats affecting the measurement and its accuracy. Can take this into account when estimating measurement uncertainty.			[SU3] Assessment of ability to use knowledge gained from the subject		

	Lecture:Definition of measurement and terms related to it. Development of measurement results, basic concepts, elements of error calculus. Temperature measurements, measurement methodology, measuring instruments, temperature scales. Measurement of air pressure and humidity, measurement methodology, classification of pressure measuring instruments, units. Measurements of the level of liquids and solids, measurements from the reservoir, measurement of point speed and average velocity of flowing liquid. Measurements of the quantity and flow rate of liquids. Measurements, measurements, measurements. Measurements of water and sewage flow. Methodology of measurements, measurements of pulsation flows. Measurements of some physical properties of bodies. Density and viscosity measurements. Measurements of some physical properties of bodies. Density and viscosity measurements. Measurements. Objectives of State Environmental Monitoring. Laboratory:Calculation of measurement errors, determination of the confidence interval, uncertainty and repeatability of the measurement of temperature, pressure and humidity by various methods. Measurements of various speed measurement methods. Flow rate measurements using primary elements, in the concentration and charge of basic physico-chemical quantities.					
Prerequisites and co-requisites	Knowledge of basic computer skills	, knowledge in the subject of mathem	atics, physics and plumbing.			
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
Assessment methods and criteria	Subject passing criteria Written exam	Passing threshold 60.0%	Percentage of the final grade 50.0%			
Assessment methods and criteria	Subject passing criteria Written exam Practical exercises	Passing threshold 60.0% 60.0%	Percentage of the final grade 50.0% 50.0%			
Assessment methods and criteria Recommended reading	Subject passing criteria Written exam Practical exercises Basic literature	Passing threshold 60.0% 60.0% Kołodziejczyk L., Rubik M., (1980), J Warszawa, Arkady. Piotrowski J. i w metody pomiarowe wybranych wielk chemicznego, Warszawa, WNT. Mic przepływu wody w kanałach otwarty Wydawnicza Politechniki Warszaws Miernictwo hydrologiczne , Warszaw Wyrażenie niepewności pomiaru. Pr	Percentage of the final grade 50.0% 50.0% Pomiary w inżynierii sanitarnej, rsp. (2009), Pomiary. Czujniki i cości fizycznych i składu chalski A. (2004), Pomiary ch, Warszawa, Oficyna kiej. Różdżyński K., (1998), va, IMGW. BIPM, (1999), zewodnik, Warszawa, GUM.			
Assessment methods and criteria Recommended reading	Subject passing criteria   Written exam   Practical exercises   Basic literature   Supplementary literature	Passing threshold 60.0% 60.0% Kołodziejczyk L., Rubik M., (1980), J. Warszawa, Arkady. Piotrowski J. i w metody pomiarowe wybranych wielk chemicznego, Warszawa, WNT. Mic przepływu wody w kanałach otwarty Wydawnicza Politechniki Warszaws Miernictwo hydrologiczne , Warszaw Wyrażenie niepewności pomiaru. Pr Grant D.M., Dawson B.D., (2001), C Handbook, Lincoln, Nebraska, Isco	Percentage of the final grade 50.0% 50.0% Pomiary w inżynierii sanitarnej, rsp. (2009), Pomiary. Czujniki i cości fizycznych i składu chalski A. (2004), Pomiary ch, Warszawa, Oficyna kiej. Różdżyński K., (1998), va, IMGW. BIPM, (1999), zewodnik, Warszawa, GUM. Open Channel Flow Measurement Inc.			
Assessment methods and criteria Recommended reading	Subject passing criteria   Written exam   Practical exercises   Basic literature   Supplementary literature   eResources addresses	Passing threshold   60.0%   60.0%   60.0%   Warszawa, Arkady. Piotrowski J. i w metody pomiarowe wybranych wielk chemicznego, Warszawa, WNT. Mic przepływu wody w kanałach otwarty Wydawnicza Politechniki Warszaws Miernictwo hydrologiczne , Warszaw Wyrażenie niepewności pomiaru. Pr Grant D.M., Dawson B.D., (2001), C Handbook, Lincoln, Nebraska, Isco   Adresy na platformie eNauczanie:	Percentage of the final grade 50.0% 50.0% Pomiary w inżynierii sanitarnej, /sp. (2009), Pomiary. Czujniki i cości fizycznych i składu chalski A. (2004), Pomiary ch, Warszawa, Oficyna kiej. Różdżyński K., (1998), va, IMGW. BIPM, (1999), zewodnik, Warszawa, GUM. Open Channel Flow Measurement Inc.			
Assessment methods and criteria Recommended reading Example issues/ example questions/ tasks being completed	Subject passing criteria   Written exam   Practical exercises   Basic literature   Supplementary literature   eResources addresses   Temperature measurement method   flow of water and sewageFlow rate   measurements	Passing threshold   60.0%   60.0%   Kołodziejczyk L., Rubik M., (1980), I   Warszawa, Arkady. Piotrowski J. i w   metody pomiarowe wybranych wielk   chemicznego, Warszawa, WNT. Mic   przepływu wody w kanałach otwarty   Wydawnicza Politechniki Warszaws   Miernictwo hydrologiczne , Warszaw   Wyrażenie niepewności pomiaru. Pr   Grant D.M., Dawson B.D., (2001), C   Handbook, Lincoln, Nebraska, Isco   Adresy na platformie eNauczanie:   IsPressure measurement methodsMe   measurement by means of hydraulic of	Percentage of the final grade 50.0% 50.0% Pomiary w inżynierii sanitarnej, /sp. (2009), Pomiary. Czujniki i ości fizycznych i składu chalski A. (2004), Pomiary ch, Warszawa, Oficyna kiej. Różdżyński K., (1998), va, IMGW. BIPM, (1999), zewodnik, Warszawa, GUM. Open Channel Flow Measurement Inc.			

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