

GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	SPECIAL GEODETIC MEASUREMENTS A, PG_00044850							
Field of study	Geodesy and Cartography							
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			6.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering							
Name and surname	Subject supervisor		dr inż. Marek Zienkiewicz					
of lecturer (lecturers)	Teachers		dr inż. Marek Zienkiewicz					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
of instruction	Number of study hours	30.0	15.0	15.0	0.0		0.0	60
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity Participation ir classes includ plan		l didactic Participation in ed in study consultation hours		Self-study		SUM	
	Number of study hours	60		9.0		81.0		150
Subject objectives	Teaching students issues related to the deformation analysis of geodetic network.							
Learning outcomes	Course out	come	Subj	ect outcome		Method of verification		
	[K6_W11] understands the concepts and has in-depth knowledge in the field of geodetic building monitoring, extended with basic knowledge in the field of statics and dynamics of engineering structures		[K6_W11] Performs geodetic measurements and carries out appropriate calculations related to geodetic monitoring of buildings,					
	[K6_W07] has a well-established knowledge and understands concepts in the field of engineering geodesy including the use of calculations and measurements methods carried out with the use of geodetic instruments and photogrammetric and remote sensing technologies related to geodetic support for investment, surveying and inventory measurements and photogrammetry with remote sensing		[K6_W07] The student performs calculations by using the least squares method,					

Subject contents	Lecture topics 1. Development of geodetic observations by using the least squares method, 2. Free adjustment of geodetic networks, 3. Geodetic measurements of displacements - introduction to the issue, 4. Designing of a control network, 5. Selected measurement methods used in determining displacements, 6. Selected issues in the field of the reliability theory of geodetic networks, 7. Adjustment of geodetic networks in constrained datums, 8. Initial adjustment of observations, 9. Identification of stable reference points, 11. Assessment of the significance of the designated displacements, 12. Modern methods of deformation analysis of geodetic network - introduction to the issue, 13. The method of the global congruency test (GCT), 14. Weighted iterative S-transformation method, 15. Geometric interpretation of determined displacements.						
	 - identification of stable reference po- calculation of displacements of con determinations made. Exercise topics Performing the deformation analysis Montsalvenes (Switzerland). 	bints by using the Fredericton approants by using the Fredericton approants at a sessment of softhe angular-linear network design	ch, the significance of the ned in the area of the water dam in				
Prerequisites and co-requisites	Independent use of traditional and modern geodetic instruments, ability to work in a team, mastered basics of matrix calculus and methods of developing of geodetic observations.						
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	Laboratories. Passing all exercises.	100.0%	0.0%				
	Exercise. Correct execution of the geodetic project.	100.0%	0.0%				
	Final exam	60.0%	100.0%				
Recommended reading	Basic literature	Wiśniewski Z. 2016. Rachunek wyrównawczy w geodezji z przykła Wiśniewski Z. 2013. Zaawansowane metody opracowania obserwa geodezyjnych z przykładami, Prószyński W., Kwaśniak M. 2015. Podstawy geodezyjnego wyznaczania przemieszczeń					
	Supplementary literature	Koch K.R. 1999. Parameter estimation and hypothesis testing in linear models, Caspary W. F. 2000. Concepts of network and deformation analysis					
		Prószyński W., Kwaśniak M. 2002. Niezawodność sieci geodezyjnych					
	eResources addresses Adresy na platformie eNauczanie:						
Example issues/	1. The geodetic control network design,						
example questions/	2. Testing of the stability of potential reference points,						
taile being completed	3. Determination of displacements of controlled points,						
	4. Diagnostics of observational material and localization of potential outliers.						
Work placement	Not applicable						