GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	APPLIED USE OF SURVEYING DATA ADJUSTMENT AND ANALYSIS, PG_00044810		
Field of study	Geodesy and Cartography		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Daria Filipiak-Kowszyk	
	Teachers	dr inż. Daria Filipiak-Kowszyk	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	0.0	0.0	60

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	60	9.0	56.0	125

Subject objectives

Teach students the practical application of alignment calculus methods to evaluate geodetic measurements, including analyzing results and estimating their accuracy.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] can use a adjustment calculations to analyze the results of measurements and determine their accuracy	The student is able to put into practice the methods of alignment calculus	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[K6_W03] knows and understands the principles of mathematical statistics described in the examples of the adjustment computations	The student knows and understands the elements of matrix calculus, statistics and probability necessary for solving tasks from the alignment calculus	[SW1] Assessment of factual knowledge

Subject contents

1. Parametric method2. Conditional method3. Mixed methods: - Parametric method with conditions binding parameters - Conditional method with parameters

Prerequisites and co-requisites

Knowledge of mathematics in the field of matrix calculus, statistics and probability, presented in the framework of the alignment calculus subject.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Solution of given tasks	60.0%	100.0%

Recommended reading

Basic literature	L.W. Baran, Theoretical foundations for the analysis of geodetic survey results, ed. PWN, 1999, WarsawZ. Wiśniewski, Alignement Calculus in Geodesy (with examples). Ed. UWM, 2009, Olsztyn
Supplementary literature	Z. Wiśniewski, Matrix algebra and mathematical statistics in alignement calculus (theory and tasks), ed. UWM, 2000, Olsztyn

	eResources addresses	Adresy na platformie eNauczanie: Praktyczne Zastosowanie Rachunku Wyrównawczego (2024/2025) - Moodle ID: 44557 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=44557
Example issues/ example questions/ tasks being completed	The distance to 4 geodetic points with given coordinates, and angles between them were measured. The following results were obtained (d1, d2, d3, d4, A12, A23, A34). The mean error of distance measurement was md and angle measurement mA. Calculate the x, y coordinates of the point and their estimated accuracy.	
Work placement	Not applicable	

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