# 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 2024 | | Academic year of realisation of subject | | 2025/2026 | | |
| 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 | | | | | | |
| | Teachers | | | | | | |

| 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. |
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| 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 | |
| | [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 | |

| Subject contents | 1. Parametric method<br>2. Conditional method<br>3. Mixed methods:<br>- Parametric method with conditions binding parameters<br>- Conditional method with parameters<br>4. Sequential alignment |
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| 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. |
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| 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, Warsaw<br>Z. 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: |
|---|---|---|
| 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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