GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematics ans Statistics, PG_00060636		
Field of study	Transport and Logistics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Obligatory subject group 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	8.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Mathematics Center -> Vice-Rector For Education		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Lech Kujawski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	45.0	0.0	15.0	0.0	90

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	90	8.0	102.0	200

Subject objectives

The aim of the subject is to enable the student to acquire competence in using basic mathematical analysis, descriptive and mathematical statistics, and applying the acquired knowledge to solve simple theoretical and practical problems encountered in engineering fields

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] has well structured knowledge of mathematics, including algebra, elements of logic, geometry, mathematical analysis and probabilistics necessary to describe and analyze the operation of means and transport systems	The student understands the need for lifelong learning, can inspire, and organize the learning process for others	[SW1] Assessment of factual knowledge
[K6_U02] can work individually and in a team, communicate using various techniques in a professional environment, as well as document, analyze and present the results of his work; can estimate the time needed to complete a given task	The student has knowledge in the field of mathematical analysis and differential equations. They can utilize the acquired concepts to solve problems related to modeling and interpreting mechanical systems, as well as manufacturing processes of devices.	[SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Mathematics: Elements of Linear Algebra: matrices, determinants, matrix rank, systems of linear equations, Kronecker-Capelli theorem, Cramer's theorem, Gauss-Jordan elimination method. Integral calculus of functions of one variable: indefinite and definite integrals with applications, integration by parts and by substitution, integration of rational, trigonometric, and irrational functions. Limits and continuity of multivariable functions. Multivariable calculus: partial derivatives, total differential, extrema of functions of two variables. Double integral: over a rectangle, over a normal set, change of variables, polar coordinates, applications of double integral. Triple integral with applications.

Statistics: Population and sample. Empirical distribution. Measures of central tendency and dispersion. Distribution of sample statistics. Central limit theorem. Graphical presentation of statistical data. Estimation (point and interval). Hypothesis testing: about mean, variance, proportion. Comparison of populations. Tests for two means, variances, and proportions. Correlation, sample correlation coefficient. Testing the significance of linear correlation coefficient. Test for two correlation coefficients. Spearman's rank correlation coefficient. Kendall's rank correlation coefficient. Regression, testing the significance of regression coefficient. Analysis of variance in regression, interval estimation in regression analysis, confidence curves. Analysis of variance. Experimental factor, experimental unit, experimental design. Completely randomized design. One-way classification model. Multiple comparison tests (Student's t-test (Fisher's method), Tukey's test, Scheffé's test). Nonparametric tests for independence, conformity, randomness of the sample.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of the material from the Mathematics I course conducted in the first semester</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td></td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>Brak</td></tr><tr><td>Supplementary literature</td><td>Brak</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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