GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematical Statistics, PG_00044533
Field of study	Transport

Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department of Railway Engineering -> Faculty of Civil and Environmental Engineering
Name and surname of lecturer (lecturers)	Subject supervisor — dr inż. Kamila Szwaczkiewicz
	Teachers — dr inż. Aleksandra Romanowska; mgr inż. Anna Gobis; dr inż. Kamila Szwaczkiewicz

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	0.0	45
	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	45	5.0	25.0	75

Subject objectives	The aim of the subject is to familiarize students with the methods of statistical data analysis such as estimation, hypothesis testing, Anova, regression and correlation.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W01] has basic knowledge of mathematical analysis, algebra, calculus of probability and operational research required for describing and solving transport problems	Performing statistical analysis of the Data Mining type	[SW1] Assessment of factual knowledge
	[K6_U06] able to plan and conduct simple laboratory and operational experiments and simulations in the area of transport; able to interpret the results and formulate conclusions	The use of a statistical apparatus to describe problems in transport.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents	Random measures. Random variables. Discrete and continuous (one- and multi-dimensional) distributions of random variables. Independence of random variables. Functions of random variables. Methods of mathematical statistics in estimation. Verification of statistical hypotheses, statistical tests. Regression and correlation.
Prerequisites and co-requisites	Knowledge of subjects: Mathematics

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test during the semester	50.0%	40.0%
	Written exam	60.0%	60.0%

Recommended reading	Basic literature	J. Greń, Statystyka matematyczna. Modele i zadania PWN Warszawa 1982.
		J. Jakubowski, R. Sztencel Wstęp do teorii prawdopodobieństwa, Script, Warszawa 2001.
	Supplementary literature	G.M. Fichtenholz, Rachunek różniczkowy i całkowy, t. 1, 2 i 3 Wydawnictwo Naukowe PWN, Warszawa 2002 (t. 1 i 2), 2003 (t. 3).
		M. Fisz, Rachunek prawdopodobieństwa i statystyka matematyczna, PWN, Warszawa 1967.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Properties of the estimator; 2. Central Limit Theorem; 3. binomial distribution, Bernoulli scheme; 4. 3 sigm rule; 5. type I and II error; 6. A necessary condition to verify the hypothesis about the equality of two general means is ... 7. If we increase the sample size, how will the confidence interval for the mean change?	
Work placement	Not applicable	