

Bialystok University of Technology									
Field of study	Computer Science							Degree level and programme type	Engineer's degree full-time programme
Specialization/ diploma path	---							Study profile	academic
Course name	Mathematical Statistics							Course code	FCS-00065
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	3
	30				30			No. of ECTS credits	6
Entry requirements									
Course objectives	To familiarize students with the basic methods of mathematical statistics. Literacy education from the corresponding theorems and formulas. Learning how to verify their calculations. Focusing on the need to draw conclusions and to formulate and justify opinions. Education ability to use Excel statistical functions, data analysis tools in Excel, R and in Python's libraries.								
Course content	Elements of descriptive statistics, probability distributions occurring in the statistics, point estimates and compartments, confidence intervals, hypothesis verification parametric compatibility tests, tests of independence, ANOVA, estimators of the correlation coefficient and the regression coefficient.								
Teaching methods	informative lecture, lecture problem, discussion related to the lecture, laboratory exercises, project method,								
Assessment method	Lecture - written exam. Specialist workshop - quizzes on the e-learning platform, reports on subsequent topics, observation of work during classes								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	selects and distinguishes the corresponding mathematical models and justify the selection of the theorem, it can refute erroneous hypothesis							K_W01	
LO2	lists and selects the appropriate model verification using estimation theory and test hypotheses attempt to one-dimensional							K_W01 K_W05	
LO3	knows how to lead a simple statistical inference, including the use of computer tools							K_U01 K_U02	
LO4	knows how to use the characteristics of the population and their estimators							K_U01 K_U02	
LO5	lists and explains the basic use of mathematical statistics in the natural sciences, social, technical, and as a tool engineer							K_U01 K_U02	
Symbol of learning outcome	Methods of assessing the learning outcomes							Type of tuition during which the outcome is assessed	
LO1	exam							L	
LO2	exam							L	
LO3	entry at laboratory, evaluation reports carry out the task							SW	
LO4	entry at laboratory, evaluation reports carry out the task, exam							SW	
LO5	observation of work at laboratory							SW	
Student workload (in hours)							No. of hours		
Calculation	1 - Participation in lectures -							30	
	2 - Participation in the laboratory specialist -							30	
	3 - Preparation for laboratory specialist -							20	
	4 - Development of laboratory reports and / or completion of homework assignments (homework) -							35	
	5 - Participation in the consultations -							5	
	6 - Presence on the exam -							2	
	7 - Preparation to the exam -							28	
TOTAL:							150		
Quantitative indicators							HOURS	No. of ECTS credits	
Student workload - activities that require direct teacher participation							67 (6)+(5)+(2)+(1)	2.7	
Student workload - practical activities							85 (4)+(3)+(2)	3.4	
Basic references	1.. W. Freiberger, U. Grenander, A short course in computational probability and statistics, New York : Springer-Verlag, 1971. 3. R. Walpole, R. Myers, S. Myers, K. Ye, Probability and Statistics for engineers and scientists, 7th edition, 2002. 3. https://docs.python.org/3/library/statistics.html								
Supplementary references	1. K. Hinkelmann, O. Kempton, Design and analysis of experiments. Vol.1, Introduction to experimental design, New York : Wiley J., 1994. 2. A. Saha, Doing math with Python: use programming to explore algebra, statistics, calculus and more, No Starch Press; 1st edition, 2015.								
Organisational unit conducting the course	Software Department							Date of issuing the programme	
Author of the programme	dr inż. Magdalena Topczewska							Feb. 17, 2022	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work, S – seminar