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	**Probabilistic Methods and Statistics**							**Course code**	**FCS-00055**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	2
	30	15			15			**No. of ECTS credits**	**6**
Entry requirements	Linear Algebra (FCS-00030), Calculus (FCS-00002), Discrete Mathematics (FCS-00054),								
Course objectives	The aim of the subject is to acquaint students with basic definitions and problems of probability and mathematical statistics.								
Course content	Lecture: random events, random variables, probability distributions, parameterization of probability distributions, correlation and regression, sampling, estimation, testing of hypotheses. Exercises: combinatorics, random events, discrete and continuous random variables, numerical characteristics of random variables, functions of random variables, two-dimensional random variables. Sw: descriptive statistics, estimators, hypothesis testing, analysis of variance, regression analysis.								
Teaching methods	informative lecture, subject exercises,								
Assessment method	Lecture – written test; exercises – tests, work on classes; specialistic workshop – evaluation of reports, short tests.								

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	can describe and put into practice the basic concepts of probability theory.	K_W01 K_U01
LO2	can calculate numerical characteristics of random variables, define their probability distributions them and examine their interaction.	K_W01 K_U01
LO3	correctly describes the concepts associated with the estimation and statistical inference.	K_W01 K_U02
LO4	is able to characterize the analyzed problem using descriptive statistics and to verify the hypothesis with properly selected statistical models.	K_W01 K_U02

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	test, work on classes	L, C
LO2	test, work on classes	L, C
LO3	test, short tests	L, Sw
LO4	test, raports	L, Sw

Student workload (in hours)	**No. of hours**
Calculation	
1 - Attendance at lectures - 15 x 2h =	30
2 - Attendance at classes and specialistic workshops - 15 x (1+1)h =	30
3 - Preparation for tests - 15 x 1h =	35
4 - Preparation for classes and specialistic workshops - 15 x 2h =	30
5 - Preparation for the test - 20	20
6 - Participation in student-teacher sessions -	5
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	65 (2)+(1)+(6)	2.6
Student workload – practical activities	95 (4)+(3)+(2)	3.8

Basic references	1. R.L. Scheaffer, Probability and statistics for engineers, Boston : Brooks/Cole : Cengage Learning, 2011 2. R. Bartoszyński R., J. Koronacki, J. Zieliński, Mathematical statistics, Warszawa : Państwowe Wydawnictwo Naukowe, 1980.	
Supplementary references	1. L. J. Bain, Introduction to Probability and Mathematical Statistics, Duxbury Classic Series, 2000	
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