Field: IT
Module title: Statistics for Engineers (B.6)
Preliminary conditions: none
Education aims: To explane the basic concepts and methods of probability theory and mathematical statistics. Describe in terms of probability and mathematical statistics random phenomenon. To teach the importance of statistical material for the purpose of describing the phenomena of mass for the selected characteristics of the population. Show the method for determining the distribution of such characteristics.
Education outcomes: The student understands the basic concepts and methods of probability theory and mathematical statistics. Can describe in terms of probability and mathematical statistics random phenomenon. He knows how to use a probability distribution and its parameters. He knows the method of approximation of the theoretical probability of an empirical probability. Understands the importance of statistical material for the purpose of describing the phenomena of mass for the selected characteristics of the population. He knows the method for determining the distribution of such characteristics. It can verify the correctness of such a specific distribution.
Module type and contents: Introduction to the probability theory: the concept of the probability space according to Kolmogorov, examples of the probability spaces (discrete space, conditional space, product space, geometrical space), the concept of the mass function (discrete mf, totally non discrete mf and continuous mf), random variable and cumulative distribution function, theorem about the distribution, parameters of the distribution, the most important distributions (binary, binomial, Poisson, uniform, exponential, normal, chi-square, t-Student, Snedecor), limits theorem: Weak and Strong of Large Number, the Central Limit Theorem. The elements of the statistics: general population and character of this population, data set, the concept of statistics and the survey of the most important statistics (the mean, variance, S-dash statistic), distribution of random vector, correlation and regression. Introduction to analysis of statistic data: histogram , the concept of the estimator and interval estimation, the methods of the results verification statistical data, introduction to the hypothesis testing theory (non parametric and parametric).
Educational methods: Lessons, classes.
Assessment methods: Examination.
ECTS credits: 6
Students workload (hs.): 150
Form Number of hours: 30
Author of a module: Ryszard Rębowski, PhD
Module language: english