Course title: Stochastic Methods	Neptun code: GEMAK414-a

Course coordinator: Dr. Sándor Fegyverneki, PhD, associate professor

type of lesson and number of lessons: **lecture (2)**

method of evaluation: colloquium

curriculum location of the subject: (autumn/spring semester): autumn and spring

pre-study conditions *(if any)*: -

The task and purpose of the subject:

Know various statistical topics, such as frequency distribution, elementary probability theory including discrete and continuous probability distributions, estimation, hypothesis testing, and regression analysis.

Be able to apply the gained knowledge to the solution of practical problems in civil engineering areas through evaluation and selection of appropriate statistical techniques.

Be able to use statistical software, such as R, to solve problems.

Know how to read and interpret computer-generated statistical output

Course description:

Estimation of correlation coefficient. Testing of dependence. Partial and multiple correlation. Regression curve. Testing for regression lines. Multivariate linear and nonlinear regression.Analyze of variances. Fisher–Cochran theorem. Classifying. Reliability theory. Estimation of the parameter of exponential distribution. Estimation of the parameters of Weibull-distribution. Distribution of maximum of independent random variables. Limit theorems for maximum..

Required literature:

1. A. C. Allen: Probability, Statistics and Queueing Theory, With Computer Applications, Academic Press, New York, 2003. ISBN-13: 978- 0120510504

2. R.B. Ash: Basic propability theory, Dover, New York, 2008.

3. R.W. Keener: Theoretical Statistics, Springer, New York, 2010.

Recommended literature:

1. O. Jones, R. Maillardet, A. Robinson: IntroductIon to Scienic Programming and Simulation using R, Chapman & Hall/CRC, Boca Raton, 2009. ISBN-13: 978-1-4200-6872-6

2. Larry Pace: Beginning R: An Introduction to Statistical Programming, Springer, New York, 2012.