Study programmes: Bachelor studies – Mathematics

Course name: Introduction to Statistics

Lecturers: Marko Obradović, Bojana Milošević, Lenka Glavaš

Status: Compulsory

ECTS: 5

Attendance prerequisites: None

Course aims: Learning methods of estimation and testing in statistics.

Course outcome: Upon completing the course, a student has basic knowledge in statistics and is capable of application of the inferential and simulation procedures to real data.

Course content:

Statistical model. Population, variable, sample. Descriptive statistics. Median, mode, range, skewness and kurtosis. Representative samples. Sampling schemes. Graphical representation of data. Histogram. Order statistics. Empirical distribution function. Discrete distributions: degenerate, uniform on finite set, Bernoulli, binomial, geometric, negative binomial, Polya, Poisson. Continuous distributions: uniform, triangular, exponential, hyperexponential, normal, gamma, beta, Cauchy, two-sided exponential, double-exponential, chi-squared, t, lognormal, Pareto. Sample mean and sample variance and their properties. Consistency and unbiasedness. MLE method. Confidence interval for p of binomial distribution. Confidence intervals for mean and variance of normal distribution. Hypothesis testing. Rejection region. Level of significance. Power. Inference on parameters of normal distribution. Pearson chi-squared test. Linear regression.

Literature:

1. H.Cramer, Mathematical Methods of Statistics, Princeton University Press, Princeton, 1999.
2. Павле Младеновић: *Елементаран увод у вероватноћу и статистику*, Друштво математичара Србије, Београд, 2001.

Number of hours: 4	**Lectures: 2**	**Tutorials: 2**	**Laboratory: -**	**Research: -**

Teaching and learning methods: Frontal / Tutorial

Assessment (maximal 100 points)

Course assignments	**points**	**Final exam**	**points**
Lectures		Written exam	-
Exercises / Tutorials	10	Oral exam	40
Colloquia	40	Written-oral exam	
Essay / Project	10		