Course: Statistical Modeling

Teacher(s): Predrag Popović

Course status: elective

ECTS: 12

Prerequisites: -

Goal

Introduction to the main concepts and methods for modeling and analysis of observed samples.

Outcomes

Mastering the methods for modeling the dependence between features within and between the observed samples, as well as the application of these methods using the programming language *R*.

Contents

Theoretical teaching

Regression analysis. Linear regression. Bayesian linear regression. Logistic regression. Analysis of variance, one-factor and multifactor problem. Analysis of variance of a sample with random blocks. Principal component analysis. Nonlinear regression models. Clustering.

Practical teaching

Defining and solving problems related to lecture subjects, with application to real data using the programming language *R*. Student research assignments.

Recommended bibliography

1. Popović B. Č., Popović P. M. (2018). Statističko modeliranje. Univerzitet u Nišu, Prirodno-matematički fakultet.
2. Denis, D. J. (2020). Univariate, Bivariate, and Multivariate Statistics Using R: Quantitative Tools for Data Analysis and Data Science. John Wiley & Sons.
3. Bishop, C. M., Nasrabadi, N. M. (2006). Pattern recognition and machine learning. New York: Springer.

Active teaching hours:	Theoretical: 4	Practical:

Methods of teaching

Lectures and practice, with active participation of the students, discussion, seminars.

Knowledge estimation: (max 100 points)

50 points on pre-exam and 50 points on oral exam