Type and level of studies: Doctoral Academic, Higher level - III cycle

Title of the study program: (303) Statistics, Doctoral Academic

Subject title: Multivariate analysis 1-D

Subject code: DMUA

Number of ECTS: 9

Subject status (Compulsory / Elective): Elective

Teacher/s (Name, last name): Vladimir, Vasić

Number of active teaching lessons:				**Other lessons**
Lectures: 3	**Practice classes**: 0	**Other forms of teaching**: 0	**Study research work**: 3	**0**

Prerequisite: none

Subject objective:

The main objective of the subject is a multidimensional statistical analysis of the surveyed data. Because many variables are recorded at the same time over the observation units, this means that their simultaneous action must also be included in the analysis. The multivariate analysis aims to show and indicate the connection between variables in a much reduced (two or three-dimensional) space. In this way it is possible to describe the structure or form of connection between the variables, which would be impossible within the original dimensional space.

Subject outcome (gained knowledge):

After mastered skills from the given subject, the acquired knowledge enables business application of multivariate analysis methods. Multivariate analysis methods are appropriate for each of the following business research tasks: data reduction or structural simplification; sorting and grouping data; Investigating the dependence between the recorded variables; prediction; as well as the construction of business hypotheses and their testing. In the application of these analyzes in market research, a large part of these techniques belongs to the area of perceptual mapping.

Subject content/structure: Multidimensional random variables. Conjoint analysis: selecting a plan, estimating the score statistics, simulation. Classification tree analysis: model creation, model evaluation, model enhancement. Problem solving problem. Nonlinear canonical correlation analysis: marginal frequencies, weights, component load, evaluation, quantification, centroids, object scales. Correspondence analysis: normalization, corresponding table, dimensionality, double diagram, profiles and spacing, row dots and columns. Multidimensional scaling: selecting the number of dimensions, stress measurements, adjustment measures, and final coordinates of the common space. Reliability analysis: descriptive statistics, Cronbach's alpha, split sample coefficients, Guttman lower bounds, parallel and striking parallel models

Teaching methods: The lectures explain the principles and procedures of multivariate procedures, as well as the way in which statistical software is used. Within the framework of the study and research work, solving complex tasks is carried out, with the help of the applied statistical apparatus, in order for the candidates to understand the given material, which they could later apply in practice. Special attention dedicates to solving real cases from business practice, where modeling is done using statistical software SPSS.

Grading (maximum number of points 100)

Pre-examination obligations	**Points**	**Final exam**	***Points***
Activities during lectures		**Written exam**	
Practice lessons		**Oral exam**	60
Colloquium/a		.....	
Semester papers	**40**		

Literature:

No.	**Author**	**Title**	**Publisher**	**Year**
1	Kovačić Z.	Multivariate Analysis	Faculty of Economics,	1998

			Belgrade	
2	IBM	IBM SPSS Advanced Statistics 24	IBM Corporation, Armonk	2016
3	Meulman, J.J. & W.J. Heiser	IBM SPSS Categories 24	IBM Corporation, Armonk	2016