Specification of the course for the Book of courses

Study program		Applied statistics	
Title of the course		Statistical Methods in Biotechnical Sciences II	
Teachers (for lectures)		Nada Lakić	
Teacher/fellow teacher (for exercises)			
ESPB	6	**Status of the course (obligatory (O) /elective (E))**	E

Conditions	
Aim of the course	The aim of the course is to enable student to acquire knowledge in statistical methods that simultaneously analyse multidimensional data obtained for each observed unit.
Course outcomes	Student will be able to apply statistical methods and use computers to perform statisical analysis and inference based on obtained data.
Content of the course	
Theoretical classes	Definition and classification of multivariate methods. Multivariate analysis of variance. Principle components method: definition, geometric and algebraic background, estimate, tests, choice of variables and application of principle components. Factorial analyisis: definition, variables, factors, variances, choice and tests of significance of covariation matrix, estimates of intensity factor, determination of number of factors, factor rotation and factor leaps. Analysis of closeness of elements: coefficients of similarity and distances for quantitative and qualitative variables. Discrimination analysis: introduction, discriminant function for two and more groups of elements, determination of number of significant disriminant functions, classification into groups. Cluster analysis: definition, problems and goals of classification, hierarchical and non-hierarchical methods of classification, choice of number of classes and evaluation of results.
Practical classes	Practical classes is held at computer centre.
References	
1	Ковачић З.(1998): Мултиваријациона анализа, Економски факултет, Београд.
2	Ивановић Б. (1977): Теорија класификације, Институт за економику индустрије, Београд.
3	Alvin C. Rencher, 2002, Methods of Multivariate Analysis, Wiley-Interscience.
4	Johnsong, N. And Wichern D. (2002): Applied Multivariate Statistical Analysis, Upper Saddle River, NJ: Prentice Hall.
5	Tabachnick, B. G. and Linda S. Fidell (2007): Using multivariate statistics, Pearson Education, Inc.

The number of contact hours per week during the semester / trimester / year

Lectures	Exercises	DON	Research work	Other classes
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Teaching methods	Lectures, exercises and practical work

Evaluation of knowledge (maximum score 100)

Pre exam duties	points	Final exam	points
activity during lectures	5	**written exam**	25
practical work	10	**oral exam**	40
seminar	20		