Specification of the course for the Book of courses

Study program			Applied statistics	
Title of the course			Elements od Advanced Mathematics	
Teachers (for lectures)			Jovan Vukmirović	
Teacher/fellow teacher (for exercises)			Milan Jovanović	
ESPB		6	**Status of the course (obligatory (O) /elective (E))**	O
Conditions	none			
Aim of the course	The aim of the course is to acquaint students with the mathematical apparatus necessary for the understanding of statistical analysis. The specific task of the course is to introduce students to the application of complex mathematical device for real problems in order to achieve functional knowledge .			
Course outcomes	After mastering the content of this course, students will be able to follow courses in the field of statistics. They will understand the application of complex mathematical apparatus that includes matrix calculus, differentiable and integral calculus of functions of one or more variables to real problems. Students will be able to apply apparatus of mathematical analysis to statistical analysis.			
Content of the course				
Theoretical classes	Elements of Analytical geometry. Series. Quadratic forms. Matrix calculus (operations on matrices, inverse matrix, characteristic roots and vectors). Functions of one variable (limit, continuity, differentiability, integrability). Functions of several variables (partial derivatives; conditional extremes). Integration. Optimization problems. Elements of Numerical Analysis.			
Practical classes	The content of practical training follows the theory. Real examples will be presented with special emphasis on the use of mathematical software to solve problems.			
References				
1	Hadžić, O., Takači, Đ.: Mathematical Methods for Students of Science, University of Novi Sad, 2000.			
2	Hughes-Hallett, Deborah: Calculus, New York [etc.]: John Wiley & Sons, Inc., 2002			
3	Stewart, James: Calculus, Belmont: Thomson, 2006			
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**
homework	10	**Oral exam**	50
colloquia	40		