

Study programmes: Doctoral studies – Mathematics – Probability and statistics			
Course name: Testing statistical hypotheses			
Lecturers: Jelena Jocković, Bojana Milošević, Pavle Mladenović, Marko Obradović			
Status: Optional			
ECTS: 9			
Attendance prerequisites: Mathematical statistics			
Course aims: Acquiring general and specific knowledge concerning testing statistical hypothesis			
Course outcome: Upon completing the course, a student is capable of applying the acquired knowledge and conducting individual scientific research in this field.			
Course content: Uniform most powerful tests. The Neyman-Pearson fundamental lemma. Distributions with monotone likelihood ratio. Confidence bounds. A generalization of fundamental lemma. Two-sided hypothesis. Least favorable distributions. Application to univariate normal models. Sequential likelihood ratio tests. Power and mean sample size needed for sequential test for ratio of two proportions. Optimal properties of sequential test. Unbiasedness: application to normal distribution. Statistics independent of a sufficient statistic. Confidence intervals and families of tests. Regression. Permutation tests. Randomization as the basis for inference. Testing for independence in a bivariate normal distribution. Invariance. Symmetry and invariance. Most powerful invariant tests. Unbiasedness and invariance. Rank tests. The two-sample problem. The hypothesis of symmetry. Confidence bands for a distribution function.			
Literature: Э. Леман: <i>Проверка статистических гипотез</i> , Наука, Москва, 1979.			
Number of hours : 10	Lectures: 4	Research: 6	
Teaching and learning methods: Frontal / Individual			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
homework	20	Written exam	
Exercises / Tutorials		Oral exam	60
Colloquia			
Essay / Project	20		