

Study programmes: PhD studies – Mathematics-Probability and Statistics				
Course name: Probability Measures in Metric Spaces				
Lecturers: Pavle. N. Mladenović				
Status: Optional				
ECTS: 9				
Attendance prerequisites: Random Processes Theory				
Course aims: Getting familiar with the theory of weak convergence of probability measures in metric spaces, especially in space of real continuous functions and space of right continuous functions on finite interval.				
Course outcome: The student has general and specific knowledge about probability measures in metric spaces, especially in spaces of real continuous functions and right continuous functions, as well of their importance in studding random processes. The student is capable for scientific research in this field.				
Course content: Measures in metric spaces. Theorem on conditions of weak convergence. Examples: Euclidean space, sequence space, space of continuous functions on interval [0,1]. Spaces product. Random elements and convergence in distribution. Weak convergence and functions. Relative compactness and the density of family of the distributions. Prokhorov's theorem. Weak convergence in $C[0,1]$ space. Wiener measure. Donsker's theorem. Functions of Brownian motion paths. Partial sums fluctuations. Empirical distribution function. Weak convergence in D space.				
Literature: P. Billingsley, <i>Convergence of Probability Measures</i> , John Wiley & Sons, New York, 1968.				
Number of hours: 10	Lectures: 4	Tutorials: -	Laboratory: -	Research: 6
Teaching and learning methods: Group or individual.				
Assessment (maximal 100 points)				
Course assignments	points	Final exam	points	
Homework	20	Written exam		
Exercises / Tutorials		Oral exam	60	
Colloquia		Written-oral exam		
Essay / Project	20			