

Faculty of Science and Mathematics / MATHEMATICS / PROBABILITY THEORY

Course:	PROBABILITY THEORY			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
3975	Mandatory	5	6	3+2+0
Programs	MATHEMATICS			
Prerequisites	It is not conditioned.			
Aims	Adopt the basic concepts of probability and trained for solving probabilistic tasks.			
Learning outcomes	After passing this exam student will be able to: 1. Precisely define the basic probability notions. 2. Formulate basic theorems. 3. Model random experiment. 4. Recognizes practical problems which can be solved by Probability methods. 5. Use the theoretical results and standard procedures for dealing probability tasks of medium difficulty.			
Lecturer / Teaching assistant	Goran Popivoda and Anđela Mijanović			
Methodology	Lectures, consultations and homeworks.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction to the subject. The concept of random events. Operations with events.			
I week exercises				
II week lectures	Probability, properties. Borel-Cantelli lemma.			
II week exercises				
III week lectures	Classical definition of probability. Examples. Conditional probability and independent events.			
III week exercises				
IV week lectures	The concept of random variables and probability distribution.			
IV week exercises				
V week lectures	Probability distribution function. Properties.			
V week exercises				
VI week lectures	Types of random variables.			
VI week exercises				
VII week lectures	Important distributions.			
VII week exercises				
VIII week lectures	Random vectors, marginal distribution. Independence of random variables.			
VIII week exercises				
IX week lectures	Random variables obtained by Borel mapping. Transformation of random vectors.			
IX week exercises	Colloquium.			
X week lectures	Expectation, properties and basic theorems.			
X week exercises				
XI week lectures	Dispersion and correlation. Conditional expectation.			
XI week exercises				
XII week lectures	Characteristic functions.			
XII week exercises				
XIII week lectures	Types of convergence in probability.			
XIII week exercises				
XIV week lectures	Law of large numbers.			
XIV week exercises				
XV week lectures	Second colloquium.			

XV week exercises						
Student workload						
Per week		Per semester				
6 credits x 40/30=8 hours and 0 minuts 3 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises 3 hour(s) i 0 minuts of independent work, including consultations		Classes and final exam: 8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts Total workload for the subject: 6 x 30=180 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 36 hour(s) i 0 minuts Workload structure: 128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)				
Student obligations		Class attendance, taking the colloquiums and last exam.				
Consultations						
Literature		1. S. Stamatović: Vjerovatnoća. Statistika, PMF 2000. 2. G. Grimett and D. Stirzaker: Probability and Random Processes, Oxford University Press, 2012. 3. B. Stamatović S. Stamatović; Zbirka zadataka iz Kombinatorike, Vjerovatnoće i Statistike, PMF 2005.				
Examination methods		Two colloquiums, maximum points are 30, each. Final exam, maximum points are 40. Mark E: from 50 to 59 points, mark D: from 60 to 69 points, mark C: from 70 to 79 points, mark B: from 80 to 89 points, mark A: from 90 to 100 points.				
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points