

Program	Level		First cycle				
	Name of the program		All study programs				
COURSE							
Course title	Probability Theory						
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)			
PMAT 220	III	Mandatory course	4	2+2+0			
Lecturer							
Course Goals	In this course student will be introduced to the basic notions and results of probability theory.						
Learning Outcomes	After attending the course and passing the exams, students are expected to be able to apply acquired knowledge in applied and mathematical disciplines.						
COURSE CONTENT							
<ul style="list-style-type: none"> - Classical definition of probability. - Sample space, σ-algebra and axiomatic definition of probability. - Conditional probability, Law of Total Probability, Bayes's Formula. - Discrete random variables. - Probability density function and distribution function of discrete random variables. - Independent and dependent random experiments. - Binomial random variables. Limit theorems for binomial random variables. - Examples of important discrete distributions. - Expectation of discrete random variables. Derivatives of probability functions. - Jointly distributed random variables, joint functions of distribution and probability density. - Continuous and mixed random variables. - Probability density function and distribution function of continuous variables. - Mathematical expectation. - Jointly distributed continuous random variables. - The weak law of large numbers. - The strong law of large numbers. - The Central Limit Theorem. 							
LITERATURE							
[1] Fikret Čunjalo, Uvod u teoriju vjerovatnoće sa riješenim zadacima, PMF Sarajevo, 2013.							
[2] Sheldon Ross, A first course in probability, Prentice Hall							
[3] Ash B. Robert, Basic Probability Theory, Dover Publications Inc. Mineola, New York, 2008.							
[4] David Stirzaker, Elementary probability, Cambridge University Press, 2003.							
STUDENT WORKLOAD (hours in a semester)							
Lectures	30	Exercises	30	Individual work	40	T o t a l	100
GRADING				REMARKS			
Criterion	Maximum points	Minimum points					
Midterm exams	40	23					
Homework assignments	20	10					
Final exam	40	22					
T o t a l	100	55					