

Study programme(s): Information Technologies				
Level: Bachelor				
Course title: Discrete Structures 2				
Lecturer: Dragan Mašulović, Maja Pech				
Status: obligatory				
ECTS: 7				
Requirements: Discrete Structures 1				
Learning objectives In this course students shall acquire deeper knowledge of discrete processes that are vital to computer science and will understand basic counting strategies, systems of linear equations, determinants and matrices, classical algebraic structures and applications in understanding simpler problems in graph theory.				
Learning outcomes At the end of the course a successful student will be able to solve elementary counting problems, solve systems of linear equations, understand basic facts about classical algebraic structures and apply this knowledge to solving simpler problems of graph theory.				
Syllabus <ul style="list-style-type: none"> • Basic Counting • The pigeonhole principle • Permutations and combinations • Inclusion-Exclusion • Systems of linear equations • Determinants and matrices • Basic modular arithmetic • Concrete algebraic structures (permutations as groups; integers and matrices as rings; rational, real and complex numbers as fields; finite fields) • Simple graphs, directed graphs, weighted graphs • Trees, spanning trees and forests • Graph isomorphism 				
Literature D. J. Hunter: "Essentials of Discrete Mathematics", Jones and Bartlett Learning, 2017 J. Matoušek, J. Nešetřil: "Invitation to Discrete Mathematics", Oxford University Press, 2008 S. G. Krantz: "Discrete Mathematics Demystified", McGraw-Hill, 2009				
Weekly teaching load				
Lectures: 3	Exercises: 2	Practical Exercises: 0	Student research: 0	Other: 0
Teaching methodology Blackboard lectures, Blackboard exercises				
Grading method (maximal number of points 100)				
Pre-exam obligations	points	Final exam	points	
<i>Colloquium 1</i>	30	<i>Oral exam</i>	<i>40</i>	
<i>Colloquium 2</i>	30			