Study programmes: Bachelor studies – Informatics				
Course name: M107 - Discrete structures 3				
Lecturers: Aleksandar Savić				
Status: Optional				
ECTS: 5				
Attendance prerequisites: M105, M106				
Course aims: Earning general and specific knowledge from discrete structures in the graph theory				
Course outcome: After conclusion of the course, student is capable of problems in discrete structures in the graph theory.				
Course content: Connectivity. Vertex and edge connectivity (Menger's theorem). Construction of reliable communication network. Matchings in graphs. Perfect matchings. Assignment problem and Hungarian method. Independent sets, coverings and graph cliques. Ramsey's graph theory. Directed graphs and transport networks. Application on rankings of tournament players. Application of one-way traffic in street network. Problems of flow in transport networks (Ford-Fulkerson algorithm etc.)				
Literature: 1. Cvetković, Kovačević, Dugošija, Čangalović, Simić, Vuleta: Kombinatorna optimizacija, DOPIS, 1996. 2. Darko Veljan, Kombinatorika sa teorijom grafova, Školska knjiga, Zagreb, 1989. 3. W.T. Tutte: Graph Theory, Cambridge Mathematical Library, 2001. (The lecturer can choose any other appropriate literature)				
Number of hours: 5	**Lecures: 2**	**Tutorials: 3**	**Laboratory: -**	**Research: -**
Teaching and learning methods: Frontal / Lectures / Exercises				

Assessment (maximal 100 points)			
Course assignments	**points**	**Final exam**	**points**
Lectures	5	Written exam	
Exercises / Tutorials	5	Oral exam	
Colloquia	30	Written-oral exam	60
Essay / Project	-		