

Study Programme: Computer Science		
Course Unit Title: Advanced topics in Combinatorics		
Course Unit Code: CS758		
Name of Lecturer(s): Dragan Mašulović, Maja Pech		
Type and Level of Studies: Master Academic Degree		
Course Status (compulsory/elective): Elective		
Semester (winter/summer): Summer		
Language of instruction: Serbian (primary), English (secondary)		
Mode of course unit delivery (face-to-face/distance learning): Face-to-face		
Number of ECTS Allocated: 6		
Prerequisites: None		
Course Aims: In this course students shall acquire advanced knowledge in one or two modern combinatorial topics and will understand corresponding combinatorial structures and methods at a deep level.		
Learning Outcomes: At the end of the course a successful student will be able to formulate and solve problems connected to the topics presented.		
Syllabus: The course covers some of the following topics: <ul style="list-style-type: none"> <input type="checkbox"/> Ramsey theory <input type="checkbox"/> Theory of generating functions <input type="checkbox"/> Theory of block designs <input type="checkbox"/> Coding and Information theory <input type="checkbox"/> Theory of association schemes <input type="checkbox"/> etc. Each topic will include basic definitions and results, fundamental techniques and advanced results and applications.		
Required Reading: H. S. Wilf: "generatingfunctionology", 3rd Ed, A K Peters Ltd, 2006 R. L. Graham, B. L. Rothschild, J.H. Spencer: „Ramsey theory", 2nd Ed, Wiley 2013 D. R. Hughes, F.C. Piper: „, Design theory“, Cambridge University Press 1988 G. A. Jones, J. M. Jones: “Information and Coding Theory“, Springer 2008		
Weekly Contact Hours: 4	Lectures: 2	Practical work: 2
Teaching Methods: Lectures are presented using classical teaching methods supported by beamer presentations and continuous interaction with students. The ability of application of theoretical knowledge is checked through independent solving of exercises on two colloquia. The final exam is oral and a student is supposed to demonstrate general understanding of the presented theoretical material.		
Knowledge Assessment (maximum of 100 points):		

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work		oral exam	40
Preliminary exam(s)	30+30		
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.