

Study programme(s): Computer Science			
Level: master			
Course title: Advanced topics in Combinatorics			
Lecturer: Dragan Mašulović, Maja Pech			
Status: elective			
ECTS: 6			
Requirements: ---			
Learning objectives 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: <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.			
Literature 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 teaching load			Other: 0
Lectures: 2	Exercises: 2	Practical Exercises: 0	
Teaching methodology 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.			
Grading method (maximal number of points 100)			
Pre-exam obligations	points	Final exam	points
<i>Colloquium 1</i>	30	<i>Oral exam</i>	40

<i>Colloquium 2</i>	30		
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