Course Unit Descriptor

Study Programme: Computer Science

Course Unit Title: Combinatorial Structures in Computer Science

Course Unit Code: CS751

Name of Lecturer(s): Dragan Mašulović, Maja Pech

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

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 combinatorics and will understand different combinatorial structures and methods, together with their theoretical background.

Learning Outcomes:

At the end of the course a successful student will be able to formulate and solve a variety of advanced combinatorial problems, to apply different combinatorial methods to examples and to explain applications.

Syllabus:

The course covers some of the following topics:

- Number series in Combinatorics (such as e.g. Stirling, Fibonacci, Catalan, etc.)
- Systems of distinct representatives
- Latin squares
- Codes and designs
- Generating functions
- Permutations
- etc.

Each topic will include basic definitions and results, fundamental techniques and advanced results and applications.

Required Reading:

P. J. Cameron: "Combinatorics: Topics, Techniques, Algorithms“, 2nd Ed, Cambridge University Press 1996
J. H.van Lint, R. M. Wilson: „A Course in Combinatorics", 2nd Ed, Cambridge University Press 2001

Weekly Contact Hours: 3	**Lectures:** 2	**Practical work:** 1

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		written exam	

participation			
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.			