Course Unit Descriptor

Study Programme: Ph.D. in Computer Science	
Course Unit Title: Homogeneous Structures 1	
Course Unit Code: ID024	
Name of Lecturer(s): Dragan Mašulović, Igor Dolinka	
Type and Level of Studies: Doctoral 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: 7	
Prerequisites: None	

Course Aims:

Introducing students to the first priciples of the theory of countable homogeneous structures.

Learning Outcomes:

At the end of the course, each successful student shall be able to construct and examine countable homogeneous structures using the method of Fraïssé.

Syllabus:

Structures. Homomorphisms and substructures. Formulas and types. Maps and the formulas they preserve. Theorems of Skolem (without proof). Back-and-forth equivalence. Automorphisms. Interpreting one structure in another. Amalgamation and preservation. Fraïssé construction and ω-categorical structures. Ryll-Nardzevski theorem. Some important examples of countable homogeneous structures: random graph, random poset, rational Urysohn space

Required Reading:

1. W. Hodges, *A shorter model theory*, Cambridge University Press 2002
2. S. Hedman, *A first course in logic*, Oxford Texts in Logic 1, Oxford University Press, 2008
P. J. Cameron, *Oligomorphic permutation groups*, London Mathematical Society Lecture Note Series 152, Cambridge University Press, 2001

Weekly Contact Hours: 2	**Lectures:** 2	**Practical work:** 0

Teaching Methods:

Theoretical instruction lectures are based on the classical teaching model (blackboard+video beam). Students are obliged to submit a seminar paper. At the oral exam students are expected to demonstrate the in-depth understanding of the material.

Knowledge Assessment (maximum of 100 points):

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

Seminar(s)	70		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			