Faculty of Science and Mathematics / COMPUTER SCIENCE /

Course:				
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
7791	Mandatory	1	10	4+0+0
Programs	COMPUTER SCIENCE			
Prerequisites	Listening and taking this course is not conditional on taking other courses			
Aims	This is a general education course for doctoral studies in computer science			
Learning outcomes	Understanding of basic mathematical concepts used in computer science.			
Lecturer / Teaching assistant	Darko Mitrovic			
Methodology	Mentoring, consultations, independent study and independent creation of tasks			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Computability: Turing machine models of computation and Cercos thesis. The stopping problem			
I week exercises	Computability: Turing machine models of computation and Cercos thesis. The stopping problem			
II week lectures	Klins theorem. Parameter theorem. Recursion theorem. Fixed point theorem			
II week exercises	Klins theorem. Parameter theorem. Recursion theorem. Fixed point theorem			
III week lectures	Arithmetic: Arithmetization. Tarskis theorem. Godels first theorem.			
III week exercises	Arithmetic: Arithmetization. Tarskis theorem. Godels first theorem.			
IV week lectures	Geels second theorem. Indecisiveness			
IV week exercises	Geels second theorem. Indecisiveness			
V week lectures	Discrete mathematics. Theory of automata.			
V week exercises	Discrete mathematics. Theory of automata. Algorithms in discrete mathematics			
VI week lectures	I colloquium			
VI week exercises	I group of homework and problems			
VII week lectures	Recapitulation.			
VII week exercises	Recapitulation.			
VIII week lectures	Algorithmic problems of algebra. Agorithms in algebra and number theory			
VIII week exercises	Algorithmic problems of algebra. Agorithms in algebra and number theory			
IX week lectures	Calculations in analysis. Fast calculation algorithms.			
IX week exercises	Calculations in analysis. Fast calculation algorithms.			
X week lectures	Random number generators. Probabilistic algorithms.			
X week exercises	Random number generators. Probabilistic algorithms.			
XI week lectures	Computational geometry. Algorithms in geometry			
XI week exercises	Computational geometry. Algorithms in geometry			
XII week lectures	Combinatorial optimization algorithms. Complexity			
XII week exercises	Combinatorial optimization algorithms. Complexity			
XIII week lectures	Numerical methods of linear algebra.			
XIII week exercises	Numerical methods of linear algebra.			
XIV week lectures	Numerical methods of mathematical analysis			
XIV week exercises	Numerical methods of mathematical analysis			
XV week lectures	II colloquium			
XV week exercises	II group of homework and problems			
Student workload	Lessons and final exam: (13 hours and 20 minutes) x16=213 hours and 20 minutes Preparations:			

	(procurement of literature, registration, certification)

Per week	**Per semester**
10 credits x 40/30=13 hours and 20 minuts 4 sat(a) theoretical classes 0 sat(a) practical classes 0 excercises **9 hour(s) i 20 minuts** of independent work, including consultations	Classes and final exam: **13 hour(s) i 20 minuts x 16 =213 hour(s) i 20 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **13 hour(s) i 20 minuts x 2 =26 hour(s) i 40 minuts** Total workload for the subject: **10 x 30=300 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **60 hour(s) i 0 minuts** Workload structure: **213 hour(s) i 20 minuts (cources), 26 hour(s) i 40 minuts (preparation), 60 hour(s) i 0 minuts (additional work)**
Student obligations	Students are required to participate in all forms of work
Consultations	Mondaz, 14:00-16:00
Literature	P. Borwein: Computational excursion in analysis and number theory, Spfringer, 2002. B. Korte, J. Vzgen: Combinatorial optimization. Theory and algorithms, Springer. 2000 M. de Berg, M. van Kreveld, M. Overmars, O. Schwarkzkopf: Computational geometry, algorithms and applications, Sringer, 2000 R. Motwani, P. Raghavan: Randomized algorithms, Cambridge University press, 1995. J.P. Solovjev, V.A. Sadobnicij, E.T. Shavgulidze, V.V. Belokurov: Elliptic curves modern number theory algorithms, Moscow-Iyevsk 2003. (in Russian)
Examination methods	- Two groups of homework are evaluated with 20 points each - Other activities during the semester are evaluated with up to 10 points - The final exam is evaluated with 50 points
Special remarks	No
Comment	Additional information about the subject at www.ucg.ac.me

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points