Name: **Algorithm Theory**		***NEPTUN-code:*** *NMXAL1EMNE*	***Number of periods/week:*** full-time: 3 lec + 0 sem + 0 lab
Credit: 5 ***Requirement:*** exam		***Prerequisite:*** -	
Responsible: Imre Rudas, Ph.D.	***Position:*** professor, DSc	***Faculty and Institute name:*** John von Neumann Faculty of Informatics Institute of Applied Mathematics	
Way of assessment: – mid-term exam – written exam			
Competences			
Course description:			
Introduction. Mathematical basics. Formal languages and automatopn: generative grammatics, finite deterministic and nondeterministic automata, stack automata. Computation models: Turing machine, Boole function and networks. Universal Turing machines. Algorithmic decidibality and computability. Undecidable problems. Recursive functions. Analysis of algorithms. Master theorem. Searching, sorting and selection functions. Matrix algorithms: Strassen and Winograd algorithms. Parallel algorithms: computational models, efficiency indicators, case studies, parallel complexity classes. Non-deterministic Turing machines and the NP class. NP-completeness.			
Literature			
L. Rónyai, G. Ivanyos, R. Szabó: Algorithms, Typotex, 2000 (in Hungarian) G. J. Chaitin: Algorithmic Information Theory, 2003 (electronic notes)			