

Name: Software Design and Development I		NEPTUN-code: <i>NIXSF1EBNE</i>	Number of periods/week: full-time: 3 lec + 0 sem + 3 lab
Credit: 6 Requirement: exam		Prerequisite: -	
Responsible: Szabolcs SERGYÁN, Ph.D.	Position: associate professor	Faculty and Institute name John von Neumann Faculty of Informatics Institute of Applied Informatics	
Way of assessment: - precondition of signature: achievement of tests and project work - oral exam			
Competences			
Course description:			
Introduction to the principles and methods of structured and object oriented programming. Introduction to an object oriented programming language. Main competencies: Concepts of algorithms, flow controls. Methods and tools of algorithm description. Data structures. Basic programming procedures: sequence calculation, decision, selection, linear search, counting, maximum selection. Complex programming procedures: copy, assorting, intersection, union. Elementary sorting algorithms: selection sort, bubble sort, insertion sort, Shell sort. Binary search. Set methods. Recursive algorithms, quicksort and merge sort. Heaps, heapsort. Elements of the object oriented paradigm: object, class, connections between classes. Features of the object oriented methodology: encapsulation, data hiding, inheritance, polymorphism, code regeneration.			
Literature			
Szabolcs Sergyán: Algorithms, Data Structures I., Óbudai Egyetem, 2014 (in Hungarian, electronic notes) T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein: Introduction to Algorithms (3rd ed.), MIT Press, 2009			