

Study program: Modern computer technologies			
Course title: Data Structures			
Professor/assistant: Miloš B. Stojanović			
Type of course: elective			
ECTS credits: 6			
Pre-requisites: none			
Aims of the course: Introducing students with the properties of data structures and algorithms. Acquiring basic theoretical knowledge on the complexity of algorithms and data structures in object oriented languages.			
Learning outcomes: Students are able to: independently set up and solve computer problems by writing algorithms and implementing different data structures in object oriented languages.			
Syllabus			
<i>Theoretical part</i> Basic data types. Simple and complex data structures. Static and dynamic data structures. Lists: single-linked, double-linked, cyclic. Deck, stack, row. Trees: binary, balanced, search trees, heap. Hash tables. Graphs. Complexity and complexity assessment of algorithms. Divide and conquer algorithms. Greedy algorithms. Dynamic programming algorithms. Randomized algorithms. NP completeness.			
<i>Practical part</i> Implementation and testing of structures and algorithms in one of the programming languages, such as Java, C ++ or C #.			
Literature			
1. D. Živković, Osnove dizajna i analize algoritama, CET, 2007. 2. R. Lafore, Data Structures and Algorithms in Java, 2nd Edition, Sams Publishing, 2003. S. Skiena, The Algorithm Design Manual, 2nd Edition, Springer, 2008.			
Number of active classes			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	
Teaching methods Combination of interactive approach with practical problem solving.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	30
practical training	40	oral exam	
colloquium(s)/seminar papers	20		
Sum	70	Sum	30