COURSE NAME	Complexity of algorithms						
Code	PMM920	Year of study	2nd year of graduate study				
Course teacher	Jurica Perić	Credits (ECTS)	6				
Associate teachers		Type of instruction (number of hours)	L	S	E		
			30		30		
Status of the course	COMPULSORY COURSE	Percentage of application of e-learning	40%				
COURSE DESCRIPTION							
Course objectives	Students will acquire knowledge in advanced algorithmic concepts. They will become familiar with designing efficient algorithms and precise analysis of their complexity.						
Course enrolment requirements and entry competences required for the course							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	The student is able to: - apply studied material for the development of new algorithms and calculate complexity of these algorithms - analyze each algorithm and analyze its basic properties (input, output, efficiency, …) - argue the importance of sorting algorithms, reproduce and compare sorting algorithms - argue advantages and disadvantages of greedy algorithms, support claims on solving optimization problems (minimum spanning tree, ...) - distinguish which method of constructing algorithms should be used for solving particular problems, compare the chosen method with other methods						
Course content broken down in detail by weekly class schedule (syllabus)	Introduction. Algorithms, basic properties, complexity. - 2 hours Asymptotic behavior of functions. - 2 hours Recursive algorithms. - 4 hours Fast matrix multiplication, algorithms for multiplication and division, quicksort. - 4 hours Greedy algorithm. - 2 hours Algorithms on graphs. - 2 hours Dijkstra, Prim, Kruskal algorithms. - 4 hours Minimum spanning tree, graph search, cycles - 6 hours Dynamic programming - 4 hours						
Format of instruction	Lectures, exercises.						

Student responsibilities	Attendance at 70% of lectures and 70% of exercises.
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Attendance – 1 ECTS Colloquium – 1.5 ECTS Written exam – 1 ECTS Oral exam – 2.5 ECTS
Grading and evaluating student work in class and at the final exam	The exam is taken in written and oral form. Written exam is preliminary part of the exam and requirement for the oral exam is to pass a written exam. The written form of the exam can be taken partially, during class, where curriculum provided. Activity in class, solving homework, colloquium, written and oral examination are the elements from which form the final grade is formed.
Required literature (available in the library and via other media)	T. H. Cormen, C. E. Leiserson, R. L. Rivest, Introduction to Algorithms, MIT Press, Cambridge, Massachusetts, 1990. D. Knuth, The Art of Computer Programming, Vol. 1, Fundamental Algorithms, Addison-Wesley, Reading, MA, USA, 1997.
Optional literature (at the time of submission of study programme proposal)	
Quality assurance methods that ensure the acquisition of exit competences	Statistics of test results and student evaluation via anonymous questionnaires at the end of the course. The survey is conducted according to the rules of the University of Split.
Other (as the proposer wishes to add)	