

NAME OF THE COURSE		Applied Algorithms				
Code	PMIE11	Year of study	UGU-2			
Course teacher	pred. Divna Krpan prof.dr. sc. Marko Rosić	Credits (ECTS)	3,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15		15	
Status of the course		Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives						
Course enrolment requirements and entry competences required for the course	Passed course: Programming II Enrolled course: Data Structures and Algorithms Competencies: Basic object-oriented concepts, C# programming language					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. select appropriate algorithm 2. compare algorithm efficiency on selected problems 3. identify adequate data structures and algorithms for specific problems 4. discuss relationship between data structures and algorithms 5. apply efficient algorithms and data structures 					
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1. Introduction to the course. Review of previous courses. 2. Algorithms and linear data structures. 3. Advanced algorithms for string processing. 4. Sorting algorithms and their application. 5. Arithmetic problems. 6. Combinatorial problems and recursions. 7. Midterm exam. 8. Trees and application. 9. Graphs and data structures. 10. Graph algorithms. 11. Dynamic programming. 12. Grid problems. 13. Geometric problems (intersection, collision detection, ...) 14. Algorithms in games. 15. Project preparation. 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> on line in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input checked="" type="checkbox"/> homework assignments			
Student responsibilities	Attendance, active participation in learning and teaching process, midterm exams, practical exam, oral exam					

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)	Name	Ects	Name	Ects	Name	Ects
	Class attendance	0,5	Research		Experimental work	
	Oral exam		Report		Homework assignments	
	Seminar essay		Essay			
	Tests	0,5	Practical training	1		
	Written exam		Project	1		
Grading and evaluating student work in class and at the final exam	Practical exam consists of two parts, first (midterm exam) represents 40% of the final practical exam grade, and second part represents 60% of the practical exam grade. Students that fail at one or both parts of the practical exam during semester only write part which they did not pass. Everyone must also pass the oral exam which is 20% of the final grade.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Griffiths, I., Adams, M., & Liberty, J. (2010). Programming C# 4.0: O'Reilly Media, Inc.			0		
	Nastavni materijali (bilješke s predavanja i vježbi) dostupni u sustavu e-učenja			0		
Optional literature (at the time of submission of study programme proposal)	S. S. Skiena, M. A. Revilla: Programming Challenges – The Programming Contest Training Manual, Springer-Verlag, New York, 2003. Robert Manger, Strukture podataka i algoritmi, Element, Zagreb, 2014. Robert Manger, Miljenko Marušić: Strukture podataka i algoritmi, skripta - 2. izdanje, Sveučilište u Zagrebu, Prirodoslovno-matematički fakultet, 2003 (dostupno online). M. McMillan: Data Structures and Algorithms Using C#, 2007 Nastavni materijali dostupni na Internetu.					
Quality assurance methods that ensure the acquisition of exit competences	Talk with students, student evaluation using the anonymous survey, the success of students in the exam, self-assessment.					
Other (as the proposer wishes to add)						