

COURSE NAME		Combinatorics			
Code	PMM804	Year of study	2nd year of undergraduate study		
Course teacher	Anka Golemac	Credits (ECTS)	5		
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	30%		
COURSE DESCRIPTION					
Course objectives	<p>The aim of the course is to introduce students to the basic topics of combinatorics and discrete mathematics.</p> <p>Students will: learn how to count some different types of discrete structures using counting techniques; adopt basic properties of some discrete structures, and learn how to relate these to practical examples.</p>				
Course enrolment requirements and entry competences required for the course	<p>Prerequisites: Taken courses Differential and integral calculus I and Linear algebra</p> <p>Entry competences: Students should be familiar with using the concepts of elementary mathematics, differential and integral calculus and vector spaces.</p>				
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>Students will be able to :</p> <ul style="list-style-type: none"> • formulate theorems and definitions of important concepts in discrete mathematics, and illustrate them with discrete mathematics examples. • construct mathematical proofs, • solve problems using counting techniques, recurrence relations and generating functions, • apply the obtained knowledge and skills to investigate and solve a variety of discrete problems. 				
Course content broken down in detail by weekly class schedule (syllabus)	<p>Introduction to combinatorics. Counting techniques, Dirichlet's principle, Ramsey numbers. (5) Permutations and combinations of sets and multisets. Binomial and multinomial coefficients. Inclusion-exclusion. (11)</p> <p>Recurrence relations, generating functions. Solving recurrences using generating functions. (10)</p> <p>Some highlighted topics in discrete mathematics. (4)</p>				
Format of instruction	Lectures and tutorial sessions.				
Student responsibilities	Class attendance. Students are expected to be present at least 70% of classes.				
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)	<p>Class attendance: 2 ECTS.</p> <p>Partial exams/Written exam: 1,5 ECTS</p> <p>Final exam: 1.5 ECTS.</p>				
Grading and	Two partial written exams / one final written exam and final oral exam.				

evaluating student work in class and at the final exam	There are 2 partial written exams during the semester. Passing the both partial exams or the final written exam allows students to take the oral exam. Successfully passing the oral exam leads to a successful completion of the course.
Required literature (available in the library and via other media)	D. Veljan, <i>Kombinatorna i diskretna matematika</i> , Algoritam, Zagreb, 2001. D. Veljan, <i>Kombinatorika s teorijom grafova</i> , Školska knjiga, Zagreb, 1989. M. Cvitković, <i>Kombinatorika</i> , zbirka zadataka, Element, Zagreb, 1994.
Optional literature (at the time of submission of study programme proposal)	Matoušek, J. Nešetřil, <i>Invitation to Discrete Mathematics</i> , Oxford University Press, Oxford, 1998. Peter J. Cameron, <i>Combinatorics: Topics, Techniques, Algorithms</i> . Cambridge University Press, Cambridge. 1994. (2nd edition) 1996. Peter J. Cameron, <i>Notes on Combinatorics</i> , http://www.maths.qmul.ac.uk/~pjc/notes/comb.pdf
Quality assurance methods that ensure the acquisition of exit competences	Anonymous student evaluations according to the regulations of the University of Split and summarizing test results.
Other (as the proposer wishes to add)	