

COURSE NAME		MATHEMATICS I			
Code	PMM005	Year of study	1st year of undergraduate study		
Course teacher	Saša Krešić Jurić Joško Mandić	Credits (ECTS)	8,0		
Associate teachers		Type of instruction (number of hours)	L	S	E
			45		45
Status of the course	compulsory	Percentage of application of e-learning			
COURSE DESCRIPTION					
Course objectives	<p>The course objective is to introduce students to the fundamentals of differential and integral calculus of functions of one variable. The emphasis is on intuitive understanding of mathematical concepts and on examples illustrating the theory. By attending tutorial sessions, the student gains sufficient technical skills for solving problems and applying the theory in practice.</p>				
Course enrolment requirements and entry competences required for the course	Prerequisites: high school level mathematics.				
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>It is expected that the student will be able to:</p> <ol style="list-style-type: none"> 1. define the fields of real and complex numbers, 2. explain the principle of mathematical induction, 3. describe the properties of real valued elementary functions, 4. apply differential calculus to study the properties of real valued functions, 5. analyze convergence of sequences and series, 6. evaluate indefinite and definite integrals, 7. apply differential and integral calculus to problems in geometry. 				
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1. Sets of numbers (2 hours) 2. Real valued functions (2 hours) 3. Elementary functions (2 hours) 4. The limit of a function, continuity, types of discontinuity (2 hours) 5. The derivative of a function and its geometrical meaning (2 hours) 6. Differentiation rules (2 hours) 7. Derivatives of elementary functions (2 hours) 8. The chain rule and derivative of the inverse function (2 hours) 9. Higher order derivatives (2 hours) 10. Implicit differentiation (2 hours) 11. The differential of a function (2 hours) 12. Fundamental theorems of differential calculus (2 hours) 13. Applications of differentiation to sketching the graph of a function (2 hours) 14. Sequences and series of real numbers, tests for convergence of series (3 hours) 15. Taylor series (2 hours) 				

	<p>16. Indefinite integral (2 hours)</p> <p>17. Integration of elementary functions (2 hours)</p> <p>18. Techniques of integration (2 hours)</p> <p>19. Definite integral (2 hours)</p> <p>20. Newton-Leibniz formula, fundamental theorems of integral calculus (2 hours)</p> <p>21. Improper integrals (2 hours)</p> <p>22. Applications of integration (2 hours)</p>
Format of instruction	Lectures and tutorial sessions.
Student responsibilities	Class attendance, partial written exams and homework assignments.
Screening student work (<i>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</i>)	<p>Class attendance and homework assignments: 2 ECTS</p> <p>Written exam: 3 ECTS</p> <p>Oral exam: 3 ECTS</p>
Grading and evaluating student work in class and at the final exam	Partial written exams and final written and oral exam. Positive grade of the written exam is required to take the oral exam.
Required literature (available in the library and via other media)	<ol style="list-style-type: none"> 1. I. Slapničar, Matematika 1, skripta, FESB, Split, 2002. 2. I. Slapničar, Matematika 2, skripta, FESB, Split, 2008.
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> 1. P. Javor, Matematika 1, 2. izdanje, Element, Zagreb, 2001. 2. B.P. Demidovič, Zadaci i riješeni primjeri iz više matematike, Tehnička knjiga, Zagreb, 1989. 3. N. Uglešić, Viša matematika I i II, skripta, PMF, Split.
Quality assurance methods that ensure the acquisition of exit competences	Anonymous student evaluations at the end of semester according to the regulations of the University of Split.
Other (as the proposer wishes to add)	