

NAME OF THE COURSE		MATHEMATICS															
Code	EUA003	Year of study	1.														
Course teacher	Full professor Zdravka Aljinović, PhD Full professor Branka Marasović, PhD Full professor Blanka Škrabić Perić, PhD	Credits (ECTS)	5														
Associate teachers	Tea Kalinić Miličević, PhD Ante Toni Vrdoljak, PhD Ivana Mravak, mag. math.	Type of instruction (number of hours)	L	S	E	F											
			26		26												
Status of the course	Obligatory	Percentage of application of e-learning	35														
COURSE DESCRIPTION																	
Course objectives	This is an introductory level course for those who intend to use mathematics in economics. The course is designed to provide students with range of basic mathematical concepts and methods in calculus. It is an essential pre-requisite for any mathematically oriented economics option and for further quantitative courses.																
Course enrolment requirements and entry competences required for the course	Prerequisites defined by the Faculty Statute. The student should pass the national exam of the B level.																
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	To identify and solve mathematical problems from the areas of elementary mathematics and mathematical analysis basics. Particular outcomes: 1. To apply set operations and their properties; 2. To expose the definition of function and to analyze its properties; 3. To expose the definition of sequence and to analyze its properties; 4. To expose the definition of series and to analyze its properties; 5. To calculate limes of the function using different techniques; 6. To solve and analyze problem tasks from the differential calculus area; 7. To solve and analyze problem tasks from the integral calculus basis.																
Course content broken down in detail by weekly class schedule (syllabus)	<table border="1"> <thead> <tr> <th colspan="2">Lectures:</th> <th colspan="2">Exercises:</th> </tr> <tr> <th>Topic</th> <th>Hours</th> <th>Topic</th> <th>Hours</th> </tr> </thead> <tbody> <tr> <td>Introductory lectures. Set theory. Universal and null sets. Set operations.</td> <td>2</td> <td>Set specifications, subset, equal sets, the power set. Set operations. Sets of real numbers.</td> <td>2</td> </tr> </tbody> </table>					Lectures:		Exercises:		Topic	Hours	Topic	Hours	Introductory lectures. Set theory. Universal and null sets. Set operations.	2	Set specifications, subset, equal sets, the power set. Set operations. Sets of real numbers.	2
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2025/2026

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	Laws of the algebra of sets. Partition. Cartesian product.	1	Set equations – proofs. Cartesian product.	1
	Functions. One-one and onto functions.	1	Functions. One-one and onto functions.	1
	Composition of functions. Inverse and identity functions.	1	Composition of functions. Inverse functions.	1
	Types of functions. Polynomial Functions. Rational and Irrational functions.	1	Polynomial Functions, factorization. Rational functions, partial fractions. Irrational functions. Domain.	1
	Exponential and Logarithm Functions. Trigonometric and inverse functions.	2	Exponential and Logarithm Functions. Trigonometric and inverse functions.	2
	Sequences. Limit of sequence. The algebra of limits of sequences.	2	Sequences. Limit of sequence. The algebra of limits of sequences.	2
	Series. Convergence tests.	2	Series. Convergence tests.	2
	Limits of functions. Right and left hand limits. Theorems of limits. Continuity.	2	Limits calculation – rules and techniques.	2
	The derivative. The geometric interpretation of the derivative. The algebra of derivatives.	2	The derivative. The geometric interpretation of the derivative. The algebra of derivatives.	2
	Implicit and higher derivatives. Differentials. Mean value theorems. L'Hospital's rule.	2	Implicit and higher derivatives. Differentials. Mean value theorems. L'Hospital's rule.	2

	Extreme values of functions. Convexity, concavity.	2	Extreme values of functions. Convexity, concavity.	2	
	The asymptotes. Curve sketching.	2	The asymptotes. Curve sketching.	2	
	Integration. Indefinite integrals. Integrals of special functions. Integration by substitution. Integration by parts. Integration of rational algebraic functions.	2	Integration. Indefinite integrals. Integrals of special functions. Integration by substitution. Integration by parts. Integration of rational algebraic functions.	2	
	Definite integrals and applications.	2	Definite integrals and applications.	2	
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input checked="" 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 type="checkbox"/> (other)		
Student responsibilities	Students are required to attend classes and actively participate in classes. Students' activity will be monitored through self-evaluation quizzes that will be available to students on the course websites within the Moodle platform. In case the student takes less than two self-evaluation quizzes during the semester and attends less than 50% of lectures and exercises, the student will be denied a signature. The condition for taking the exam is a signature.				
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>)	Class attendance	1.5 ECTS	Research	Practical training	
	Experimental work		Report	Self-evaluation quizzes	0.5 ECTS
	Essay		Seminar essay	(Other)	
	Tests	1.5 ECTS *	Oral exam	(Other)	
	Written exam	3 ECTS *	Project	(Other)	

Grading and evaluating student work in class and at the final exam	<p>Exam consists of two written parts, the first one with exercises and the second one with theory. Positively evaluated first part is precondition for approaching the second part of the exam.</p> <p>*During semester two tests with exercises will be held. The precondition for approaching the tests is student's self-evaluation through quizzes. Once the first part of the exam is passed, through tests or in regular exam terms, it is valid through the whole academic year. Each test brings 50 points. Students who achieve at least 50 points from max 100 points (with the condition that in each of two tests have at least 20 points) are free of passing the first part of the exam in the current academic year, and they can directly approach the second part in the regular exam terms.</p> <p>Scoring and appropriate marks: 0-49 insufficient (1) 50-64 sufficient (2) 65-75 good (3) 76-85 very good (4) 86-100 excellent (5)</p>		
Required literature (available in the library and via other media)	<p style="text-align: center;">Title</p>	<p style="text-align: center;">Number of copies in the library</p>	<p style="text-align: center;">Availability via other media</p>
	Babić, Z., Tomić-Plazibat, N., Aljinović, Z., Matematika, Sveučilište u Splitu, Ekonomski fakultet, Split, 2008.	10	
	Optional literature (at the time of submission of study programme proposal)	<p>Babić, Z., Tomić-Plazibat, N., Aljinović, Z., Matematika za ekonomiste, Sveučilište u Splitu, Ekonomski fakultet, Split, 2005.</p> <p>Chiang, A.C., Osnovne metode matematičke ekonomije, MATE, d.o.o., Zagreb, 1994.</p> <p>Gardijan, M. et al., Zbirka zadataka iz matematike, Sveučilište u Zagrebu, Ekonomski fakultet, Zagreb, 2015.</p> <p>Perić, T., Matematika u ekonomskoj analizi, Alka script, Zagreb, 2016.</p> <p>Šego, B., Matematika za ekonomiste, Narodne novine, Zagreb, 2005.</p>	
Quality assurance methods that ensure the acquisition of exit competences	<p>Registering students' attendance and success in carrying out of their duties (lecturer). Monitoring lectures and practice sessions (Vice-Dean for academic and student affairs).</p> <p>Students' Performance analysis in each course (Vice-Dean for academic and student affairs).</p> <p>Student questionnaire on the quality of lecturers and lessons for each course (University of Split, Quality Assurance Centre)</p> <p>Examination is used as an instrument to evaluate individual course outcomes by the course lecturer. The content of exam is reassessed periodically in order to assure compliance with the course outcomes.</p>		
Other (as the proposer wishes to add)	The course is taught in Croatian.		