

Study Program: Physics			
Type and level of studies: Bachelor studies			
<b>Course name: Mathematics 1</b>			
Lecturer: Milena Lekić			
Status: Compulsory			
ECTS: 10			
Attendance prerequisites:			
<b>Course aims</b>			
Enabling physics students to apply the acquired knowledge of higher mathematics: elements of linear algebra, recognition and analysis of flow and graph functions, calculating definite and indefinite integrals.			
<b>Course outcome</b>			
The students have acquired the necessary knowledge of higher mathematics: elements of linear algebra, limit values of sequences and functions, continuity of a function, derivative of a function and its properties, definite and indefinite integral and their applications, mathematical models in physics.			
<b>Course content</b>			
<i>Theoretical part</i>			
Systems of linear equations, solving and discussion. Definition and properties of determinants. Definition and properties of matrices, addition, multiplication of matrices, inverse matrix. Matrix equations. Definition and properties of vectors and vector products. Analytical geometry. Mathematical models in physics. Real numbers. Definition of the function, sequence, limits value of sequences and functions, their properties and algebraic operations, as well as the basic theorems. Features of a function with and without first derivatives. Geometric and physical interpretation of the first derivative, higher derivatives. L'Hôpital's rule, mean value theorem. Mathematical models in physics. Basic types of indefinite integrals. Definition of a definite integral. Application of a particular integral to calculate the area, volume, arc length and area of rotating bodies. Mathematical models in physics.			
<i>Practical Part:</i>			
Exercises: systems of linear equations, solutions and discussions, determinants, matrices, matrix equations, vectors and vector products. Mathematical models in physics. Solving problems in: functions, sequences, sequence limit values and functions. Examining and graphing functions. Practicing L'Hôpital's rule. Mathematical models in physics. Exercises on basic types of indefinite integrals, definite integrals, application of a definite integral to calculation of area, volume, arc length and rotating body area. Mathematical models in physics.			
<b>Literature</b>			
1. Д.С. Митриновић, Д. Михаиловић, П.М. Васић: Линеарна алгебра – полиноми – аналитичка геометрија, Грађевинска књига, Београд 1968.			
2. Д. Михаиловић: Елементи математичке анализе, Завод за уџбенике, Београд 1968.			
3. П. Миличић, М. Ушчумлић: Збирка задатака из више математике, Наука, Београд 1996.			
<b>Number of active classes</b>			Other classes
Lectures: 3	Practical classes: 3	Other forms of teaching:	
<b>Teaching methods</b>			
Lectures (3 classes per week during the semester), calculation exercises (3 classes per week during the semester).			
<b>Assessment (maximum 100 points)</b>			
<b>Course assignments</b>	<b>points</b>	<b>Final exam</b>	<b>Points</b>
Lectures	15	oral exam	35
Term papers	15		35
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<b>Total</b>	<b>30</b>		<b>70</b>