

Study program: Electrical and Computer Engineering, Mechatronics			
Type and level of studies: Undergraduate studies			
<b>Course title: Mathematics 3</b>			
<b>Name of lecturer/lecturers: Damljanović Ž. Nada</b>			
Language of instruction: English			
ETCS: 6			
Prerequisites: -			
Semester: Winter			
<b>Course unit objective</b> Enabling students to develop abstract thinking and acquire fundamental mathematical knowledge in the theory of differential equations, complex analysis and integral transformations, as well as their applications.			
<b>Learning outcomes of Course unit</b> At the end of the course, students would master basic mathematical ideas, concepts and results, and they would be able to apply practically their knowledge within the same or within some other scientific fields and subjects.			
<b>Course unit contents</b> <i>Theoretical classes</i> Differential equations of higher order, basic definitions, general and Cauchy solutions, decreasing order of differential equations, homogeneous linear differential equations with constant coefficients, non-homogeneous linear differential equations with constant coefficients, Lagrange method of variation of constants, systems of differential equations, homogeneous linear system of first order, general solution, the process of finding the fundamental system of solutions, non-homogeneous linear system of first order, partial differential equations, complex numbers, complex sequences, complex series, complex functions, limit and continuity of complex functions, complex differentiation, Cauchy-Reimann conditions, analytic functions, harmonic functions, complex integration, complex line integral, indefinite integral, primitive functions, Cauchy integral formula, representation of analytic functions by series, Taylor series, Laurent series, isolated singularities, residues, calculation of definite integrals using residues, integral transformation, Laplace transformation, basic properties of Laplace transform, inverse Laplace transform, Laplace transform and some applications. <i>Practical classes</i> Solving concrete problems, examples and exercises based on exposed theoretical concepts and principles.			
<b>Literature</b> [1] J. R. Chasnov, Introduction to Differential Equations, The Hong Kong University of Science and Technology, 2019, <a href="https://www.math.ust.hk/~machas/differential-equations.pdf">https://www.math.ust.hk/~machas/differential-equations.pdf</a> [2] W. Rudin, Real and Complex Analysis, 3 ed., McGraw-Hill, 1986. [3] M. Ušćumlić, P. Miličić, Problems in higher mathematics 2, Naučna knjiga, Beograd, 1988 (in Serbian).			
<b>Number of active teaching hours</b>			Other classes
Lectures: 3	Practice: 3	Other forms of classes:	
<b>Teaching methods</b> The lectures are performed using classical methods of teaching in combination with video projector and active interaction with students. Knowledge of students is tested by homework, colloquium, and final exam (written and oral). At the final, a comprehensive understanding of the exposed material is checked.			
<b>Examination methods (maximum 100 points)</b>			
<b>Exam prerequisites:</b>	<b>No. of points:</b>	<b>Final exam:</b>	<b>No. of points:</b>
Student's activity during lectures	6	oral examination	25
Practical classes/tests	30	written examination	35
Seminars/homework	4	.....	
Project			
Other			
<b>Grading system</b>			
<b>Grade</b>	<b>No. of points</b>	<b>Description</b>	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	Less than 50	Failing	