Study program: Electrical and Computer Engineering

Type and level of studies: Undergraduate studies

Course title: Practicum in Mathematics 3

Name of lecturer/lecturers: Damljanović Ž. Nada

Language of instruction: English

ETCS: 6

Prerequisites: -

Semester: Winter

Course unit objective

Introduction to ideas, concepts and results that represent support to subject of Mathematics 3 (differential equations, complex analysis and integral transformations).

Learning outcomes of Course unit

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.

Course unit contents

Theoretical classes

Method of unknown coefficients for solving non-homogeneous linear differential equations of higher order with constant coefficients, symmetrical system of differential equations of the first order, first integral, systems of differential equations of the first order and corresponding differential equations, partial differential equations of the first order and its corresponding system of differential equations, unambiguous and ambiguous notion of complex functions and branches, elementary complex functions, the difference between the differentiation of complex functions of a complex variable and real functions of a real variable, relationship between complex analytic functions and infinitely differentiable real functions of two real variables, simply connected and multiply connected areas in the Gaussian plane, Cauchy-Gurses theorem for multiply connected areas, Morera's lemma, Cauchy inequality, Liouville's lemma, Gauss theorem on the mean value, conformal mappings,special functions, Gamma functions, Beta functions, Legendre polynomials, Chebyshev polynomials, Bessel functions, integral transformation, Fourier integral, basic properties of Fourier transformation.

Practical classes

Solving concrete problems, examples and exercises based on exposed theoretical concepts and principles.

Literature

[1] J. R. Chasnov, Introduction to Differential Equations, The Hong Kong University of Science and Technology, 2019, https://www.math.ust.hk/~machas/differential-equations.pdf

[2] W. Rudin, Real and Complex Analysis, 3 ed., McGraw-Hill, 1986.

[3] M. Uščumlić, P. Miličić, Problems in higher mathematics 2, Naučna knjiga, Beograd, 1988 (in Serbian).

Number of active teaching hours				Other classes
Lectures: 1	Practice: 1	Other forms of classes:	Independent work:	

Teaching methods

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.

Examination methods (maximum 100 points)

Exam prerequisites:	**No. of points:**	**Final exam:**	**No. of points:**
Student's activity during lectures	6	oral examination	25
Practical classes/tests	30	written examination	35
Seminars/homework	4	……	
Project			
Other			

Grading system

Grade	**No. of points**	**Description**
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