Study program: Information Technology, Engineering Management, Technics and Informatics
Type and level of studies: Undergraduate studies
Course title: Mathematics 2
Name of lecturer/lecturers: Lazarević D. Vera, **Damljanović Ž. Nada**
Language of instruction: English
ETCS: 6
Prerequisites: -
Semester: Summer

Course unit objective

Enabling students to develop abstract thinking and acquire fundamental mathematical knowledge in the theory of series, the theory of differential and integral calculus of functions of several variables, and the theory of differential equations, as well as their applications in engineering, computer science, management, etc.

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

Numerical series, functional series, uniform convergence, Weierstrass criteria, properties of uniformly convergent series, power series, radius of convergence, properties of power series, Taylor series, trigonometric series, Fourier series, representation of function as Fourier series, representation of function as trigonometric series, real functions of several variables, limit and continuity, partial derivates, geometric interpretation of the first partial derivative, higher order partial derivatives, differential of function, higher order differentials , Taylor and MacLaurint series, extremes of functions of several variables, conditional extremes, integrals of functions of several variables, double integrals, calculation methods and applications, triple integrals, calculation methods and applications, line integral of I type, line integral of II type, Green's formula, surface integrals of I type, surface integrals of II type, differential equations, general and Cauchy solutions, methods for solving differential equations of the first order, the method of separation of variables, homogeneous differential equations, linear differential equations, Bernoulli's equation, Riccati's equation, Clairoix equation, Lagrange equation, total differential equation, integrating factor.

Practical classes

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

Literature

[1] S. Lang, Calculus of Several Variables (Undergraduate Texts in Mathematics) 3rd Edition, Springer, 1996.

[2] W. Rudin, Principles of Mathematical Analysis, Walter Rudin Student Series in Advanced Mathematics, 3rd Edition, McGraw–Hill, 1976.

[3] P. Miličić, M. Ušćumlić, Problems in higher mathematics 1, Nauka, Beograd, 1993 (in Serbian).

Number of active teaching hours				Other classes
Lectures: 3	Practice: 3	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