

Study program: Information Technology			
Course title: MATHEMATICS 2			
Teacher(s): Nada Ž. Damljanović, Dragan Ž. Đurčić			
Course status: mandatory			
Number of ECTS credits: 6			
Prerequisite courses: /			
Course unit objective			
Acquiring 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. Creating the necessary mathematical basis for other subjects of study.			
Learning outcomes of Course unit			
At the end of the course, the student should master the basic mathematical ideas, concepts and results from these areas and be able to independently apply them in professional subjects.			
Content of the course			
<i>Theoretical teaching</i>			
Indefinite integral, definite integral, applications of definite integral, improper integrals. Numerical series, basic properties of series, series with positive members, convergence criteria, alternative series, absolute and conditional convergence, 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 derivatives, geometric interpretation of the first partial derivative, higher order partial derivatives, differential of function, higher order differentials, Taylor and MacLaurin series, extremes of functions of several variables, conditional extremes, integrals of functions of several variables, double integrals, calculation methods, change of variables in the double integral, polar coordinates, computing areas, computing volumes, computing the areas of surfaces, change of variables in the triple integral, spherical and cylindrical coordinates, triple integrals, calculation methods, change of variables in the triple integral, spherical and cylindrical coordinates, 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, Clairoux equation, Lagrange equation, total differential equation, integrating factor.			
<i>Practical teaching</i>			
Solving concrete problems, examples and exercises based on exposed theoretical concepts and principles.			
Literature			
[1] Torgašev, A., Đurčić, D., Stevanović, M. (2006). Predavanja i vežbe iz matematike 2, Tehnički fakultet u Čačku, Čačak, 2006, ISBN 86-7776-032-6.			
[2] Nikolić, R., Damljanović, N. (2016). Zbirka rešenih zadataka iz matematike 1, Fakultet tehničkih nauka, Čačak, ISBN 978-86-7776-202-5.			
[3] G. Baranenkov, B. Demidovich, V. Efimenko, S. Kogan, G. Lunts, E. Porshneva, E. Syeheva, S. Frolov, R. Shostak, A. Yanpolsky, Problems in mathematical analysis, Under the editorship of B. Demidovich, Translated from the Russian by G. Yankovsky, Mir publishers, Moscow, 1989. https://ia902803.us.archive.org/9/items/problemsinmathem031405mbp/problemsinmathem031405mbp.pdf			
[4] Ušćumlić, M., Miličić, P. (1988). Zbirka zadataka iz više matematike 2, Naučna knjiga, Beograd, ISBN 86-23-20012-8.			
Number of active teaching classes: 6		Theoretical teaching: 3	Practical teaching: 3
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.			
Evaluation of knowledge (maximum number of points 100)			
Pre-exam obligations		Points	Final exam
Activity during theoretical classes		3	Final exam (written):
Activity during practical classes		3	Final exam (oral):
Colloquium		30	
Homework		4	