Mathematics I Course

Name of the subject: **Mathematics I**	*SUBJECT code:*	Weekly hours: 3 lectures + 3 indoor practice	Credit: 8
Subject leader: ***Darko Kocev***	*Academic Degree:* *Assistant Professor*	Prerequisites:	

Purpose: Application of acquired knowledge in the field of content items.

Course description: Through the course, students should learn to use matrix calculus (determinants) for solving systems of linear equations, solve the problems of minimum and maximum, learn the basic notions of functions of two variables and be able to apply that knowledge in the following upcoming mathematical subjects as well as subjects for which we need mathematical tools.

Schedule

Weeks	Topics
1.	Introducing of basic notions (sets, relations, algebraic structures, sets of numbers).
2.	Matrices (definitions, equality of matrices, addition and multiplication of matrices).
3.	Determinants; Matrix inverse.
4.	Rank of a matrix.
5.	Systems of linear equations (solving the system using Gaussian method of elimination, Cramer's rule and Kronecker-Capelli theorem).
6.	Real functions of a real variable (basic notions).
7.	Limits of functions; Continuity of functions.
8.	Derivative of a function; Differential of a function.
9.	Theorems about differentiation; L'Hopital's rule; Taylor's formula.
10.	Intervals of monotonicity of a function and local extremums of a function.
11.	Intervals of convexity and inflection points.
12.	Drawing the graph of a function
13.	Functions of two variables; partial derivatives.
14.	Local extremums of functions of two variables.

Final grade: 20pt – activity during the lecture; 40pt – colloquium; 40pt – final exam (<51pt fail; 51-60 grade 6; 61-70 grade 7; 71-80 grade 8; 81-90 grade 9; 91-100 grade 10)

Compulsory literature:

1. M. Janić, Matematika (I i II), TF Bor, 2003.
2. M. Janić, Zbirka rešenih zadataka iz Matematike (I i II), TF Bor, 1996.
3. M. Ušćumlić, P. Miličić, Zbirka zadataka iz više matematike I, Nauka Beograd, 1996.
4. S. Vukadinović, D. Sučević, Z. Šami, Matematika II sa zbirkom zadataka, Saobraćajni fakultet, Beograd, 2003.

Supplemental literature:

1. B.P. Demidovič, Sbornik zadač i upražnenii po matematičeskomu analizu, Nauka, Moskva, 1997.