Information sheet for the course
Mathematics I

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Social and Economics Relations*	
Course unit code: *VSP2*	**Course unit title:** *Mathematics I*
Type of course unit: *compulsory*	

Planned types, learning activities and teaching methods: *2 hours of lectures / 2 hours of seminars per week. 28 hours of lectures / 28 hours of seminars per semester. In-class format.*

Number of credits: *4*

Recommended semester: *1st*

Degree of study: *I.*

Course prerequisites: *none*

Assesment methods:

During the semester there will be two written assessment work with minimum of 50% and active participation in seminars. By 50% of absence the conditions are not met to take the exam (attendance randomly). Rating A: 90-100%. Rating B: 80-89%. Rating C: 70-79%. Rating D: 60-69%. Rating E: 50-59%. Rating FX: less than 50%. During the semester to exam a student can get 8 bonus points (first written work 3 points, second written work 3 points, 1 point for 100% attendance at lectures (presence randomly), 1 point for 100% participation. At the end of semester: Exam. Resulting rating: achieved average.

Learning outcomes of the course unit:

In the introductory part of the semester the aim of the course is to unify school mathematics knowledge with respect to the allowance of mathematics at different types of secondary schools. After passing the course a student will obtain knowledge about a range of numbers, operations in a range of numbers, the function of one real variable and basic knowledge of the differential calculus. The student should know and understand basic concepts, methods and algorithms in selected topics of arithmetic and mathematical analysis. The student should be able to solve practical problems of the differential calculus in applications in economic tasks.

Course contents:

1 Statements, sets, number sets N, Z, Q, R, K, propositional form, quantifiers, maximum, minimum, supremum and infimum range of numbers. Showing.

2 The concept of sequence, the selected sequence. Limit of a sequence.

3 Fundamental theorems on limit sequence, step-limit sequence.

4 Function of one real variable, the function concept, methods to determine function. Elementary functions, polynomial, rational, power type, exponential and logarithmic functions, trigonometric and cyclometric function.

5 Monotone function, periodic function. The odd and even functions. Operations with functions.

6 Composite function, inverse function, increase of function.

7 Definitions of limits of function, basic limit theorems on, and rules for calculating the limit function.

8 Indirect limit function limit in deferend points -∞, ∞, one-sided limits of function.

9 Continuity of a function, properties of continuous functions on a closed interval, asymptote of graph function.

10 Derivation of the function. Geometrical meaning of the derivative function. Derivation rules to derive and derivative of elementary functions.

11 Differential functions, derivatives of higher order. L'Hospital rules.

12 The use of derivatives to examine the function during the function. Monotony, convexity and concavity features inflection point, maximumand minimum function.

13 The course of function.

Recommended of required reading:
Hricišáková, D.: Matematika . TnUAD, FSEV, Trenčín 2011
Petrušová, D. – Rybičková, L.: Matematika II. Zbierka úloh. TnUAD, Trenčín 2011
Hricišáková, D.: Podklady, príklady a testy na prijímacie pohovory na školský rok 2008/2009
z ekonómie, ekonomiky, matematiky a cudzích jazykov (časť Matematika). TnUAD, FSEV,
Trenčín 2007
Hricišáková, D. a kol.: Matematika I. TnUAD ÚPHV, Katedra matematiky, Púchov 2001
http:/elearning.tnuni.sk/course/view.php?id=20□

Language: *Slovak*

Remarks:

Subject is offered in the winter semester of the first year of full-time studies and external studies. This course is mandatory. The number of students in a seminar group ranges from 20 to 25 students.

Evaluation history:

Total number of students being assessed: *609*

A	B	C	D	E	FX
1.64	2.13	12.97	2.13	58.78	22.33

Lectures: *doc. RNDr. Daniela Hricišáková, CSc., Ing. RNDr. Dagmar Petrušová, PhD., RNDr. Magdaléna Tomanová*

Last modification:

Supervisor: *doc. Ing. Ján Kútik, CSc.*