Information sheet for the course
Applied Mathematics

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *M-PV-4*	**Course unit title:** Applied Mathematics
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *Lecture: 2 hours weekly/26 hours per semester of study; face to face* *Seminar: 2 hours weekly/26 hours per semester of study; face to face* *Laboratory tutorial:0*	
Number of credits: *8*	
Recommended semester: *2nd semester in the 1st year full-time* *2nd semester in the 2nd year part-time*	
Degree of study: *the 3rd degree of study (PhD. degree)*	
Course prerequisites: *none*	
Assessment methods: *Lecturers, exercises*	
Learning outcomes of the course unit: *The student will expand their knowledge of the statistical analysis of data from numerical mathematics and the use of information technology for data processing. The knowledge used to process your dissertation on understanding the context and the relationship between the chemical composition of the studied material and material characteristics of the final product.*	
Course contents: *Extending knowledge of areas: theory and experiments of statistics. Special types of distributions of discrete and continuous random variables. Measurement error. The point estimate of the parameter. Interval estimation of parameter. Measurement uncertainty. Testing statistical hypotheses. Reliability testing. Statistical analysis of multidimensional data. SPECIAL nonlinear regression models. Correlation - correlation models, the correlation coefficients. Conventional interpolation methods. Approximation of functions. Approximation tabular dependencies.* *Extending knowledge of areas: Numerical algorithms tasks and their compliance and stability. Errors. Special methods for solving systems of linear equations. Errors solutions of systems of linear equations. Numerical integration. Numerical solution of differential equations. Boundary value problems for ordinary differential equations. Some partial equation. Some types of thermal and chemical analysis. Stationary and transient analysis. MKP. Navier-Stokes equations.*	
Recommended of required reading: Ronald A. Fisher:The Design of Experiments (1935). *Anděl, J.: Matematická statistika, Praha: SNTL, 1985.* *Török, Cs.: Úvod do teórie pravdepodobnosti a matematickej štatistiky. Košice: TU, 1991.* *Hines, W.W., Montgomery, D.C.: Probability and Statistics in Engineering and Management Science. John Wiley @ Sons, 1980.*	

Bartko, R., Miller, M.: Matlab I. Digital Graphic, Trenčín.
Riečanová, Z.: Numerické metódy a štatistika. Alfa, Bratislava 1987.
Míka, S.: Numerické metódy - lineárna algebra, ZČU, Plzeň, 1996.
Práger, M.: Numerická analýza, ZČU, Plzeň, 1995.
Přikryl, P.: Numerické metódy - aproximácia funkcií a matematická analýza, ZČU, Plzeň,1996 Míka, S.-
Přikryl, P.: Numerické metódy riešenia obyčajných diferenciálnych rovníc - okrajové úlohy, ZČU, Plzeň, 1994.
Kaukič, M.: Numerická analýza I., MC Energy, Žilina, 1998.
Buchanan, L. - Turner: Numerical Methods and analysis. McGraw Hill, 1992.
Bačová, B.- Kříž, F.: Matlab – laboratórne cvičenie, EDIS, Žilina 1998.
Zienkiewicz, O.C.- Taylor, R.L: The Finite Element Method, Vol. 1-2, 1989, 1991.
Bathe, K.J.: Finite Element Procedures. Englewood Clifs, 1996.
Kassab, A.- Aliabadi, M.H.: Coupled Field Problems, WITpress, 2001.

Language: *Slovak*

Remarks:

Evaluation history:

A	B	C	D	E	FX

Lecturers: *doc. RNDr. Ladislav Matejíčka, CSc.*

Last modification: *30.04.2014*

Supervisor: *prof. Ing. Darina Ondrušová, PhD.*