Information sheet for the course
Applied Statistics

University: *Alexander Dubček University of Trenčín*	
Faculty: *VILA – Joint Glass Centre*	
Course unit code: *ApS*	**Course unit title:** *Applied Statistics*

Type of course unit: *compulsory*

Planned types, learning activities and teaching methods:
Lecture: 2 hours weekly/13 hours per semester of study; face to face
Seminar: 2 hours weekly/13 hours per semester of study; face to face

Number of credits: *10*

Recommended semester: *1st semester in the 1st year (full-time)*

Degree of study: *III. (PhD.)*

Course prerequisites: *none*

Assesment methods: *EXAM*

Learning outcomes of the course unit:
Students acquire theoretical knowledge for individual application of statistical methods for data treatment in the field of study. Simultaneously the practical knowledge of using table editors, statistical software and on-line internet applications is reached. Student can set the zero hypotheses, decide the application of proper statistical test, and interpret the obtained results in frame of studied problems.

Course contents:
Lectures:
1. *Variables and theirs properties, random event, probability of random event.*
2. *Probability distribution, types of distributions, descriptive statistics.*
3. *Data acquiring, target population, sample, types of selection.*
4. *Stating of zero and alternative hypotheses.*
5. *Point and interval estimates of statistical parameters.*
6. *Significance level, errors of I. and II. kind.*
7. *Parametric tests.*
8. *Nonparametric tests.*
9. *Analysis of variance.*
10. *Regression analysis, correlation.*
11. *Interpretation of results of statistical tests, risks of application of improper tests.*
12. *Principles of chi-squared test, contingence tables, categories of data.*
13. *Individual putting of semester thesis according to theme of students study.*

Seminars:
1. *Examples of variables from the field of study, characteristics of their properties, events and their probability.*
2. *Types of probability distributions used in technical praxis, calculations of data transformation.*
3. *Data acquiring and calculation of descriptive statistics of traced numerical variables.*
4. *Formulation of zero and alternative hypotheses according to tested variables.*
5. *Available statistical software and internet on-line statistical tools. Preparation of data for statistical treatment.*

6.   Application of statistical tests, interpretation of p-value of testing criterion, application of statistical tests for particular significance level.
7.   Testing of data distribution normality and of variance homogeneity of testing variables.
8.   Checking the difference between non-parametric and parametric tests applied on the same set of data.
9.   Practical application of analysis of variance, sum of squares.
10.   Practical application of chi-square test, contingence table and interpretation of results.
11.   Calculation of correlation coefficients, transferred correlation.
12.   Regression analysis – practical applications
13.   Presentation of statistical methods application results for solving the particular tasks of semester thesis of individual students.

Recommended of required reading:

Chajdiak J. Štatistika jednoducho v Exceli. Statis, Bratislava, 2013, 341 s. ISBN 978-80-85659-74-0.

Chajdiak J., Rublíková E., Gudába M. Štatistické metódy v praxi. Statis, Bratislava, 1997, 309s. ISBN 80-85659-08-5.

Varga Š. Matematická štatistika. STU, Bratislava, 2012, 219s., ISBN 978-80-227-3789-0.

Language: *Slovak*

Remarks:

Evaluation history:

A	B	C	D	E	FX

Lectures: *RNDr. Vladimír Meluš, PhD.*

Last modification: *April 2015*

Supervisor: *Prof. Ing. Marek Liška, DSc.*