

Information sheet for the course Applied Statistics

University: <i>Alexander Dubček University of Trenčín</i>	
Faculty: <i>VILA – Joint Glass Centre</i>	
Course unit code: <i>ApS</i>	Course unit title: <i>Applied Statistics</i>
Type of course unit: <i>compulsory</i>	
Planned types, learning activities and teaching methods: <i>Lecture: 1 hour weekly/13 hours per semester of study; face to face</i> <i>Seminar: 1 hour weekly/13 hours per semester of study; face to face</i>	
Number of credits: <i>4</i>	
Recommended semester: <i>1st semester in the 1st year (full-time)</i>	
Degree of study: <i>II. (Ing.)</i>	
Course prerequisites: <i>Mathematics</i>	
Assesment methods: <i>EXAM</i> <i>Full presence on seminars. During semester student may acquire 80 points - 30 points for the semester thesis presenting the application of statistical methods in student's field of study and 50 point for the exam. The classification scale is as follows: A at least 75 points, B at least 70 points, C at least 65 points, D at least 60 points, and E at least 55 points. The semester thesis is a compulsory prerequisite for assignment of credits.</i>	
Learning outcomes of the course unit: <i>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.</i>	
Course contents: Lectures: <ol style="list-style-type: none"> 1. <i>Variables and theirs properties, random event, probability of random event.</i> 2. <i>Probability distribution, types of distributions, descriptive statistics.</i> 3. <i>Data acquiring, target population, sample, types of selection.</i> 4. <i>Stating of zero and alternative hypotheses.</i> 5. <i>Point and interval estimates of statistical parameters.</i> 6. <i>Significance level, errors of I. and II. kind.</i> 7. <i>Parametric tests.</i> 8. <i>Nonparametric tests.</i> 9. <i>Analysis of variance.</i> 10. <i>Regression analysis, correlation.</i> 11. <i>Interpretation of results of statistical tests, risks of application of improper tests.</i> 12. <i>Principles of chi-squared test, contingency tables, categories of data.</i> 13. <i>Individual putting of semester thesis according to theme of students study.</i> Seminars: <ol style="list-style-type: none"> 1. <i>Examples of variables from the field of study, characteristics of their properties, events and their probability.</i> 2. <i>Types of probability distributions used in technical praxis, calculations of data transformation.</i> 	

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, contingency 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., MPH.; RNDr. Zdenka Krajčovičová, PhD.*

Last modification: *April 2015*

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