

General Information			
Course name	Statistics 2	ECTS Credits	6
		Semester	winter
Aims			
<p>The purpose of this course is to provide information about advanced statistical methods when familiarity with the basic methods is expected. Basis fields include various kinds of analysis of variance (independent samples, repeated measures, mixed ANOVA MANOVA), factor analysis, multiple linear and logistic regression, cluster analysis and structural equation modelling. These statistical methods are introduced firstly on lectures with the theoretical background and the process of computing together with assumptions is presented. Next, these methods are practised on exercises with SPSS software.</p>			
Contents			
<p>Brief outline of the course:</p> <ol style="list-style-type: none"> 1. Review of basic statistical methods 1 (descriptive statistics – measures of central tendency, variability, position, hypothesis testing – parametric statistics). 2. Review of basic statistical methods 2 (hypothesis testing – nonparametric statistics, correlation, regression). 3. One-way analysis of variance. Purpose, assumptions, procedure, results interpretation, post hoc tests. 4. Two-way ANOVA, repeated measures ANOVA. Purpose, assumptions, procedure, results interpretation, post hoc tests. 5. Nonparametric alternatives of ANOVA (Kruskal-Wallis, Friedman, Cochran Q). Suitable scientific questions and data, purpose of methods, assumptions, procedure, results interpretation, post hoc tests. 6. MANOVA. Purpose, assumptions, differences in comparison with ANOVA, logic of test, procedure in SPSS, results interpretation, post hoc tests (ANOVA). 7. Polynomial regression analysis, logistic regression. Differences from simple regression, purpose, methods of regression, assessing regression model and predictors. Appropriateness of logistic regression in psychological research. 8. Factor analysis (exploratory), principal components analysis. Purpose of factor analysis, methods of factor analysis, rotation, factor loadings, decisions about number of factors, interpretation of results. 9. Cluster analysis. Purpose and logic of cluster analysis. Methods, reading cluster analysis results. 10. Multidimensional scaling. Purpose and logic of multidimensional scaling, its methods and possible applications. 11. Structural equations modelling. Differences from "classical" statistical methods (confirmation technique), examples of use (confirmatory factor analysis, mediation), assessing model, changing model 			

Evaluation

Students evaluation is based on class activity during the semester (10 points) and on the test in the middle of the semester (30 points). The test consists of three practical questions solved on computers with SPSS software. Students with at least 21 points during the semester are allowed to take an exam. Final exam (60 points) consists of theoretical as well as of practical questions and more than 30 points is needed to pass the exam.

Final evaluation (sum of all points):

A (90-100p)

B (80-89 p.)

C (70-79p.)

D (60-69 p.)

E (51-59 p.)

FX (0-50 p.)

Bibliography

Ho, R. (2013). Handbook of Univariate and Multivariate Data Analysis with IBM SPSS, CRC Press.

Field, A. (2009). Discovering Statistics sing SPSS. SAGE.

Landau, S., Everitt, B.S. (2004). A handbook of statistical analyses using SPSS. Chapman & Hall/CRC, Boca Raton.

StatSoft, Inc.: Electronic Statistics Textbook. Tulsa, OK: StatSoft. WEB: <http://www.statsoft.com/textbook/stathome.html>, 1999.