

## Course Description Statistics

### Aim of the course

#### Aim of the course:

Goal of the course is provide theoretical background for understanding fundamental issues of statistical reasoning and to develop basic practical skills in statistical analyses.

#### Learning outcome, competences

knowledge:

- Knowledge of basic concepts, understanding of simple (univariate) analyses methods
- Knowledge of criteria for performing univariate analyses and understanding statistical output
- Ability of statistical reasoning; ability to perform appropriate (APA style) conclusions based on test results
- Understanding the limitations of statistical analyses

attitude:

- Developing sensitivity and interest towards using scientific methods in psychology research
- Using the acquired statistical knowledge in a flexible and creative manner

skills:

- Skills to perform descriptive statistics and report results
- Ability to formulate statistical hypotheses and test those with appropriate statistical tests
- Skills to run appropriate tests of inferential statistics in programs independently (using e.g. SPSS, JASP, PSPP, CogStat, ROPstat) and conclude results

### Content of the course

#### Topics of the course

Basic statistical terms: variables and their types, sample and population, distributions and their characteristics, descriptive and inferential statistics, hypothesis testing, level of significance, effect size,

Parametrical and non-parametrical statistical tests for comparing groups and conditions: one-sample-, paired-samples- and independent-sampled t-tests; analyses of variance; the Mann-Whitney test, the Wilcoxon test, the Sign Test, the Kruskal-Wallis test, the Friedman test.

Comparing distribution of qualitative variables: the Chi-square test, McNemar test

Association analyses of quantitative variables using correlation and linear regression.

#### Learning activities, learning methods

lecture, assisted and self-development of practical skills

### Evaluation of outcomes

#### Learning requirements, mode of evaluation, criteria of evaluation:

requirements

- active participation in class
- presenting theoretical knowledge discussed on lectures
- performance in class and completing homework assignments

mode of evaluation:

Written exam based on theoretical knowledge from the lectures and literature. graded from 1-5.

Practical grade from 1-5 based on performance of in class practical tasks, homework and midterms.

Final grade of the course is the mean of the exam (50%) and practical (50%) grades, if both are above 1 (rounded according to mathematical rules).

criteria of evaluation:

- Quantity and quality of theoretical knowledge related to basic statistical terms and methods of analyses.
- Quality of demonstrating practical skills in data analyses and concluding results.

### **Reading list**

#### **Compulsory reading list**

Selected readings from:

- Minium, E.W., Clarke, R.C., Colodarci, T. (1999) 2nd ed.: Elements of statistical reasoning. Wiley: New York
- Andy Field (2009) Discovering Statistics Using SPSS (ISBN: 9781847879073)
- Online Statistics Education: An Interactive Multimedia Course of Study by David Lane and colleagues