

## Course Description

### Title of the Course: Multivariate Statistics Practical

#### Aim of the course

Aim of the course: The students who successfully complete this course are expected to acquiring proficiency in using SPSS for multivariate analyses in practice. Students are acquiring the judicious selection of analyses, with the applicability and interpretation of them. This class is based on the knowledge acquired in General Research Methods and Multivariate Statistics class.

#### Learning outcome, competences

knowledge:

- students are expected to get familiarity with statistical methods available in SPSS environment.
- students get deeper understanding of effect sizes, statistical power, and the limitations of the traditional hypothesis testing.

attitude:

- students are expected to gain confidence in making their own statistical analyses, checking the assumptions and understanding the outputs
- students are expected to think creatively and flexibly while applying the learnt knowledge in practice

skills:

- we aim to learn the structure of database, data cleaning, data transformations.
- we aim to prepare students to analyze their own data with IBM SPSS software flexibly and compose their MA theses.
- we aim to prepare students to interpret their results precisely and appropriately

#### Content of the course

##### Topics of the course

- Introduction the topics and assignments – Preparing dataset to analysis and exploring data in IBM SPSS.
- Correlations and linear regression analysis in SPSS.
- Multiple linear regression analysis in SPSS.
- Multiple linear regression analysis in SPSS – moderation and mediation analysis using PROCESS macro.
- Logistic regression analysis in SPSS.
- T-test family and its nonparametric alternatives.
- Introducing ANOVA, ANCOVA post hoc tests and contrasts.
- Factorial ANOVA and Repeated measures of ANOVA.
- Principal component analysis and exploratory Factor Analysis in SPSS.
- Categorical data analysis

##### Learning activities, learning methods

- students are acquiring the judicious selection of analyses, with the usage and interpretation of them through several educatory examples
- students get Power Point presentations with screenshots of the SPSS settings and detailed written discussion of the output interpretation

## Evaluation of outcomes

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

*The grade consists of two exams::*

- Two statistical exams (midterm and final) on using SPSS: 50% each.
- Statistical exams will be **written tests** with the usage of IBM SPSS statistical software. A data file will be provided and the students have to perform the statistical analyses needed and the results should have to be reported in the learnt way.
- All exams should have to be passed for the completion of the course.

mode of evaluation:

- 5-level grading, based on the achieved scores in percentages

criteria of evaluation:

- GRADING of each exams based on scores achieved:  
0-50 % = 1 (failed)  
51-65 % = 2 (passed)  
66-79 % = 3  
80-89 % = 4  
90-100 % = 5
- the final grade is the average of the two exams (it is rounded mathematically to the nearest integer)

## Reading list

### Compulsory reading list

- Field A. (2013). *Discovering Statistics Using IBM SPSS Statistics 4th edition*, Sage Publications.  
Chapter 3. – The IBM SPSS Statistics environment pp. 89-120.  
Chapter 4. – Exploring Data with graphs pp. 121-163.  
Chapter 5. – The beast of bias pp. 163-211.  
Chapter 7. – Correlation pp. 270-292.  
Chapter 8. – Regression pp. 314-356.  
Chapter 10. – Moderation, mediation and more regression pp. 392-428.  
Chapter 19. – Logistic regression pp. 775-799.  
Chapter 9. – Comparing two means pp. 371-391.  
Chapter 6. – Non-parametric models 213-261.  
Chapter 11. – Comparing several means: ANOVA (GLM 1) pp. 460-477.  
Chapter 12. – Analysis of covariance, ANCOVA (GLM 2) pp. 488-506.  
Chapter 13. – Factorial ANOVA (GLM 3) pp. 520-542.  
Chapter 14. – Repeated-measures designs (GLM 4) pp. 555-590.  
Chapter 17. - Exploratory factor analysis pp. 686-706.  
Chapter 18. - Categorical data pp. 736-746.

### Recommended reading list

- Tabachnick, B. G., & Fidell, L. S. (2012). *Using multivariate statistics* (6th ed.). Boston: Pearson Education.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach*. New York: The Guilford Press.