Course title: Quantitative Research Methods: Multivariate Statistics - 6 ECTS

Type of course: Compulsory doctoral program course

Year of study: 1st or 2nd study year

Semester: II semester (Spring)

Number of credits allocated: 6 ECTS

Name of lecturer: Prof.dr. Bernadeta Goštautaitė, bergos@ism.lt

Language of instruction: English

Room: tba

Course annotation:

This course aims to provide students with the statistical knowledge to interpret quantitative research. The most common analysis techniques will be demonstrated with actual research data. Students will learn to identify the appropriate tests for a given research question and dataset and they will learn how to carry out these techniques in SPSS.

At the end of the course, a doctoral student is expected to be able to:

- Describe and visualize data

- Explain basic concepts of statistics

- Identify the appropriate tests for a given research question and a given set of variables

- Carry out, via SPSS, the most common analysis techniques and accompanying significance tests and to interpret the output

- Find patterns in complex multivariate data

Learning outcomes

Course learning outcomes (CLO)	Study methods	Evaluation methods
CLO1 Be able to understand and explain basic concepts of	Seminars, individual exercise	Participation in class and submission of home

statistics		assignments.
CLO3 Be able to identify the appropriate tests for a given research question	Seminars, individual exercise	Participation in class and submission of home assignments.
CLO4 Be able to use SPSS analysis techniques and to interpret the output	Seminars, individual exercise	Participation in class and submission of home assignments.
CLO5 Be able to find patterns in complex multivariate data	Seminars, individual exercise	Participation in class and submission of home assignments.
CLO5 Be able to describe data in research manuscripts	Seminars, individual exercise	Participation in class and submission of home assignments.

Course content:

The course is composed of seminars and exercises which is provided during seminars.

The seminars are designed to delve into the exploration and description of empirical data through statistical methods (including frequency, proportion, mean, median, mode, standard deviation, variance, etc.) and graphical representations (such as histograms, bar plots, etc.). Additionally, the sessions will cover the elucidation and visualization of relationships between variables using techniques like correlation, scatter plots, conditional plots, etc. The aim is to equip participants with a comprehensive understanding of statistical tools and graphical representations for effective data analysis.

Teaching methods: Lectures to explain theory and hands-on demonstrations in SPSS. Students will be asked to solve exercises in SPSS. All course material can be found on the e-learning platform http://elearning.ism.lt/ .

Assessment methods: Student performance in this course will be evaluated with one assignment.

During the course students are expected to fulfil following assignments:

Assignment	Value in per cent from the final grade
Data analysis (4 assignments, see Table 1)	90 % of the final grade
Class participation	10 % of the final grade

Description of course assignments

1. Data analysis

The student will be asked to answer some research questions based on a given dataset.

2. Class participation

Students are expected to participate in class actively. This requires coming to the class, carrying out the exercises in SPSS, asking questions whenever things are unclear, and participating actively in class discussions.

Table 1. Overview of the course

Day	Time[i]	Topic	Assignment
22 01 2024	9:00-14:45	Introduction, assumptions, descriptive data analysis	Describing and visualizing data (1), due 9 am next day
23 01 2024	9:00-14:45	Mean differences: t-tests, ANOVA	Analyzing experimental data (2), due 9 am next day
24 01 2024	9:00-14:45	Regression, Chi-Square tests, hierarchical models	Analyzing correlational data (3), due 9 am next day
25 01 2024	9:00-14:45	Mediation and moderation	Analyzing (conditional) process models (4), due 9 am next day
26 01 2024	9:00-14:45	Working with individual projects	*Bring your own data (if available) with you!*

Readings:

1. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis. Upper Saddle River, NJ: Pearson Prentice Hall (Chapters 1, 3, 4, 8).

2. Babbie, Earl. (2007). The Practice of Social Research. Thomson: Wadsworth (Chapters 5, 16).

3. Hayes, A. F. (2018). Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach. Second Edition. Guilford Press.

[i] 9:00-10:30 Lecture, 10:30-10:45 Coffee break, 10:45-12:15 Lecture, 12:15-13:15 Lunch break, 13:15-14:45 Lecture