LJUBLJANA SUMMER SCHOOL 2018

COURSE TITLE: Multivariate analysis

Type of course:
Bachelor course (for students in the final year of study) & Master course

ECTS credits: 6

Lecturer:
Denis Marinšek, PhD, Assistant Professor
University of Ljubljana, Faculty of Economics, Slovenia

Aims of the course:
The course is especially aimed at graduate students as preparation to correctly perform serious statistical analyses when writing their master theses. The course will be practice-oriented, since all explained statistical techniques will be practically applied to real datasets using the SPSS statistical software. During the course, students will gain a broad knowledge of statistics and multivariate techniques, with an emphasis on the correct application to the given datasets. At the end of the course, students will be able to perform quantitative analyses either for academic purposes or for their future workplace.

Course syllabus:
1. Basics and statistical inference
    a. SPSS Software
    b. Preparation of datasets
    c. Descriptive statistics
    d. Hypotheses testing
        i. Parametric tests
        ii. Non-parametric tests
2. Regression techniques
    a. OLS regression
        i. Testing assumptions
        ii. Visualizing data
        iii. Dummy variables
    b. Multilevel linear regression
        i. Panel datasets
    c. Cluster confounding
3. Dimension reduction techniques
    a. Principal component analysis
    b. Factor analysis
4. Classifying
    a. Clustering
    b. Discriminant analysis
    c. Logistic regression

Literature:

- Field, Andy (2013): Discovering Statistics Using IBM SPSS Statistics, 4th edition. London: Sage.
- Tabachnick, B. G. et al. (2013): Using multivariate statistics, 6th edition. New York: Pearson.
- West, B. T. (2014): Linear Mixed Models, 2nd edition. London: Taylor & Francis Inc.
- Marinšek, Denis (2018): Topics in multivariate analysis.

Teaching methods:

Each statistical technique will be theoretically explained and then practically applied to the given dataset with the SPSS software. The teaching process will be held in a computer classroom, in which each student will have his/her own computer with SPSS installed. During the 3-week course, students will prepare a short seminar paper, in which they will apply the statistical and multivariate techniques covered in the course to their own datasets (preferably on the topic of their master/bachelor thesis). At the end of the course, each student will need to demonstrate practical knowledge of using SPSS software and successfully pass the final exam.

Prerequisites:

It is expected that students had at least an introductory course in statistics.

Examination methods:

- Seminar work (30%)
- SPSS practical exam (30%)
- Final exam (40%)

Grading scale:
55-64% (6); 65-73% (7), 74-82% (8); 83-91% (9), 92-100% (10).

*Note: This course is comparable to the officially accredited course Multivariate analysis (ECTS: 6)*IMB at the Faculty of Economics, University of Ljubljana.*