Multivariate statistical Methods (3MI09NVC13P) for PhD Students

I. GENERAL INFORMATION

Number of hours per semester: 26 (2 practices/week or 4 practices per fortnight)

Credits: 6

Semester: spring

Language: English

Prerequisites: basic mathematics and Statistical methods (3MI09NAK01P)

Course type: mandatory/optional

Department: Dpt. of Biometrics and Agricultural Informatics

Course leader: Dr. Ladányi, Márta PhD, associate professor, head of department

Course description: During the semester, based on the knowledge the students have aquired in BSc/MSc/PhD level standard Biometrics and Statistics courses, some chapters of multivariate statistics will be discussed with complex applications in computer lab in a practical way with many examples from agriculture that are adjusted specially to the demands of the current PhD students. We use the statistical software IBM SPSS.

Requirements: At the end of the semester, the students have to write a report applying at least one of the methods in their own special fields.

Assessment, grading: Grades are given upon a student project report submitted at the end of the semester.

Recommended readings:
Special handouts are available during the course.
Field, A. (2009) Discovering Statistics using SPSS. SAGE Publications Ltd. London, California India, ISBN 978-1-84787-906-6 ISBN 978-1-84787-907-3

II. DETAILED PROGRAM

Discussed chapters:

1. Cluster analysis methods: K-means; hierarchical methods, two-way clustering; advantages and disadvantages; similarity and dissimilarity indices; clustering mixed data; representation techniques
2. Discriminant analysis and diagnostics

3. Data reduction methods: principal component analysis; factor analysis, learning latent structures; spatial rotation; representation; diagnostics
4. Data reduction methods applied in general linear models
5. Canonical correlation analysis
6. Indicator analysis; multivariate techniques in analysis of structures explained by indicators

Learning outcomes: After having completed the course, students will be able to manage data and to evaluate the observations choosing the appropriate multivariate method correctly, moreover, to report the results in a suitable manner. They can apply their skills in publishing scientific papers as they learn how to present and reason their findings and conclusions professionally.

Attendance policy: Students may be absent for 2 tutorial meetings. Missing more than two tutorial meetings will result in loss of credit for the module. Please note that the two absences are provided for sickness, so save your absences for situations you really need them.

Test(s) during the course: -

Programme: The course is for PhD students.