ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Applied Multivariate Statisitics (with supplements)

Spring 2012 – Markus Kalisch

Goals: Hands-on knowledge

- able to identify suitable method
- able to solve problem on the computer (software: R)
- able to interpret results
- know concepts of the involved methods

More theoretical alternative:

401-3626-00 V, Multivariate Statistics, Fall 2012
Prof. M. Maathuis

Two courses

- Without Supplements – 3 CP

- With Supplements – 6 CP
  A bit more theory
  Considerably more excercises

- Homepage:
  http://stat.ethz.ch/education/semesters/ss2012/ams

Tentative schedule

No.	Date	1st hour	2nd hour with Suppl.	2nd hour without Suppl.
1	20.2.	Introduction	Visualization 1	Dito
2	27.2.	Visualization 2	Outlier detection	Excercise
3	5.3.	Imputation	Multiple Imputation	Dito
4	12.3.	MDS	SOM	Excercise
5	19.3.	PCA 1	PCA 2	Dito
6	26.3.	LDA	Logistic Regression	Excercise
7	2.4.	Expl. Factor An. 1	Expl. Factor An. 2	Dito
8	23.4.	Conf. Fact. An.	SEM	Excercise
9	30.4.	Cluster An. 1	Cluster An. 2	Dito
10	7.5.	Trees	RF	Dito
11	14.5.	Repeated Meas. 1	Repeated Meas. 2	Dito
12	21.5.	Graph. Models	Causality	Exercise 1st & 2nd hour

Course material

- See Homepage for course notes, excercises, announcments, etc.
- We will mainly follow:
  B. Everitt & T. Hothorn, “An Introduction to Applied Multivariate Analysis with R”, 2011
  (available online for free from within the ETH network; see homepage)
- We will use several other papers or book chapters from other books as a supplement

Excercises

- With Supplements:
  Monday 15-17
  HG E 19 (computer room)

- Without Supplements:
  On indicated Mondays 14-15 or 13-15
  HG G 19.1

Exam – WBL students

- Written exams (midterm / endterm) as usual

- Exact dates: 2.4. / 4.6.

Exam – Rest:

- 30 minutes oral exam in my office
- Content:
  Solve a case study with Rstudio on my computer
  Explain some concepts with pencil and paper
- You may bring a 1-page summary with you
  (DIN A4, two sided print; by hand or by computer)
- I expect a student WITH Supplements to know more and have better analysis skills

Experiment

- I'll try to record video notes for the analysis of the case studies in R and publish them online

- Questions?