JOHANNES KEPLER
UNIVERSITY LINZ

Master Seminar Quantitative Research Methods

266.018, SS 2016

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Seminar Description

This seminar will follow a modern data science approach. We will use R – one of the most popular statistical programming languages – hands-on throughout the course. You will learn how to apply statistical methods to practical research questions in management. You will understand the importance of reproducible research and create reproducible reports and presentations.

Entry Requirements

- Completed courses: Master Course Dimensions of Marketing Theory and Managerial Application (Modul Marketing) and Master Course Organization (Modul Organization). This is a hard requirement.
- A PC (MacOS or Windows) to install R and RStudio (both are available for free). We will use RStudio extensively throughout the course. Ideally, you would have a laptop to bring to our class meetings.
- Programming skills are not required. However, you need to be prepared to learn a programming language and to write short computer scripts in R.
- Basic understanding of quantitative research methods is highly recommended but not required. Students who do not have much prior knowledge in quantitative methods or in statistical programming will need to catch up by investing more time in (guided) self-study.

Seminar Schedule and Topics

(see KUSSS for possible changes)

Date	Time	Room	Topic
10.3.	17:15–19:45	HF 9901	Seminar overview, introduction to programming language R
17.3.	17:15–19:45	K 033C	Reproducible research, knitr
7.4.	17:15–19:45	K 033C	Exploratory data analysis, ggplot
14.4.	17:15–19:45	K 033C	Examples exploratory data analysis
21.4.	17:15–19:45	K 033C	Statistical inference
28.4.	17:15–19:45	K 033C	Regression models
12.5.	17:15–19:45	K 033C	Preparation for team papers, presentations
19.5.	17:15–19:45	K 033C	Team Presentations

Grading

- Class Assignments: 60%
- Team research project (paper & presentation): 40%
- A minimum of 80% attendance is required.

Literature

1. Textbooks on basics:

   David Diez, Cristopher Barr, and Mine Çetinkaya-Rundel (2014). *Introductory Statistics with Randomization and Simulation. First Edition.* CreateSpace Independent Publishing Platform. A free PDF version is available at www.openintro.org.

   Nina Zumel and John Mount (2014). *Practical Data Science with R.* Manning Publications Company.

   Pervez N. Ghauri and Kjell Grønhaug (2010). *Research Methods in Business Studies.* 4th Edition. Financial Times Prentice Hall. Some copies are available in the JKU library.

   Alternatively, for German speakers: Johannes M. Lehner and Alois Farthofer (2012). *Evidenzbasiertes Management. Methoden und Kompetenzen der Organisationsanalyse. Mit einführenden Beispielen zu R, Mathematica und SPSS.* Wien: Linde Verlag.

2. Books on specific topics:

   Roger D. Peng and Elizabeth Matsui (2015). *The Art of Data Science. A Guide for Anyone Who Works with Data.* URL: https://leanpub.com/artofdatascience

   Jeff Leek (2015). *The Elements of Data Analytic Style. A guide for people who want to analyze data.* URL: https://leanpub.com/datastyle

   Roger D. Peng (2015b). *R Programming for Data Science.* URL: https://leanpub.com/rprogramming

   Roger D. Peng (2015a). *Exploratory Data Analysis with R.* URL: https://leanpub.com/exdata

   Brian Caffo (2015b). *Statistical Inference for Data Science. A companion to the Coursera Statistical Inference Course.* URL: https://leanpub.com/LittleInferenceBook

   Brian Caffo (2015a). *Regression Models for Data Science In R. A companion book for the Coursera Regression Models class.* URL: https://leanpub.com/regmods

   Roger D. Peng (2015c). *Report Writing for Data Science in R.* URL: https://leanpub.com/reportwriting