I N S T R U C T I O N   S H E E T
(PART WAGNER)

PhD MANAGEMENT

Experimental and Simulation Methods (390026)

o. Univ.-Prof. Dipl.-Ing. Dr. Dr. h. c. Udo Wagner
Univ.-Prof. Mag. Dr. Bernhard Kittel

SS 2020

Wednesday, 15:00 – 16:30; SR 4

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1. Target Group

Students of the PhD-Program in Management
This course is part of the core program of the curriculum PhD management, see:
https://wirtschaftswissenschaften.univie.ac.at/studium/phd/studienangebot/management/#c63443
Students are recommended to have passed Multivariate Business Statistics successfully. Expertise using SPSS is required.

2. Organizational Issues

- 2 Hours, 5 ECTS credits
- Language of Instruction: English
- Limited number of participants (max. 15)
- Students are required to register via the U:Space-System

3. Course Content and Course Objectives

This course introduces experimental design and the statistical analysis of experimental data. In the first part **Prof. Kittel**) will discuss:
- Introduction, Causality and Experimental Design
- Trial Laboratory Experiment
- Control, Validity and Generalizability
- Incentives, Noise and Ethics
- Laboratory Experiments
- Field Experiments
- Survey Experiments
 For further details, see:
https://soc.univie.ac.at/studium/ss-2020/

In the second part (**Instructor Prof. Wagner**), appropriate statistical methods will be presented which are suited for analyzing data collected by means of experimental research projects. We will differentiate according to the level of measurement of the dependent variable and further between the designs of the experiment (i.e., between-subjects vs. within-

subjects). In order to be able to perform statistical analysis on empirical data examples will be provided as to how SPSS implements the techniques presented. Students have to conduct statistical analyses on an individual data sets provided by the instructor and have to provide written reports about the results achieved. Finally, an introduction to simulations methods (focusing on human behavior) will be provided.

After passing this course students should be able to design research projects on their own and to analyze the data generated therefrom.

4. Course Grades

Since not all of the material can be discussed in class, students are expected to prepare for class sessions by studying the relevant literature (see Readings-section). Regular class attendance is expected.

Course grades will be based on various requirements, with the following weights:
- Part Prof. Kittel   50 %
- Exam (Part Prof. Wagner)   40 %
  (Students will have to conduct data analysis in the Computer Lab; open book exam)
- Data analysis projects (Part Prof. Wagner)   10 %

In order to receive your computerized credit report, be sure to have registered in u:space.

Please respect correct scientific conduct when writing research papers and in particular never neglect citation guidelines when using intellectual work of others; see for example: https://www.univie.ac.at/forschung/weitere-informationen/gute-wissenschaftliche-praxis/gute-wissenschaftliche-praxis-bei-abschlussarbeiten-und-im-studium/

5. Readings

Copies of the Power Point presentations will be made available on the „MOODLE" platform.

Part Prof. Wagner

(BEPW) Backhaus Klaus, Erichson Bernd, Plinke Wulff, Weiber Rolf (2016) *Multivariate Analysemethoden*, 14. Auflage, Springer.

(BEW) Backhaus Klaus, Erichson Bernd, Weiber Rolf (2015) *Fortgeschrittene Multivariate Analysemethoden*, 3. Auflage, Springer.

(EWV) Ebster Claus, Wagner Udo, Valis Sabine (2006) "The Effectiveness of Verbal Prompts on Sales", *Journal of Retailing and Consumer Services 13, 3*, 169-176.

(EWRP) Ebster Claus, Wagner Udo, Richter Verena, Prenner Madeleine (2009) „Context Effects of Erotic Television Advertising", *Marketing – JRM 5, 2*, 61-70.

(HHL) Hillier Frederick, Hillier Mark, Lieberman Gerald (2000) *Introduction to Management Science*, McGraw-Hill.

(**TF1**) Tabachnick Barbara, Fidell Linda (2014) *Using Multivariate Statistics*, Sixth edition, Pearson.

(**TF2**) Tabachnick Barbara, Fidell Linda (2007) *Experimental Designs Using ANOVA,* Thomson.

Further Readings

Bühl Achim (2014) *SPSS 22 – Einführung in die moderne Datenanalyse*, 14. Auflage, Pearson.

Field Andy (2018) Discovering Statistics Using IBM SPSS Statistics, 5th edition, Sage.

6. Time Schedule (Part Prof. Wagner)

Date	(Tentative) Content
01.04.	Basic terminology: experimental design and statistics Discrete dependent variables: cross tabulations, Chi-square tests, log-linear models, logistic regression, Correspondence analysis, McNemar's change test TF1 10, 16　　　　　　　　TF2 1, 2 BEPW 5, 6, 15　　　BEW 7　　　EWV
22.04.	Ordinal dependent variables: Mann-Whitney U Test, Wilcoxon T Test, Kruskall-Wallis H Test, Friedman Test TF1 10, 16
29.04. 06.05.	Basic terminology: t-Test, effect sizes, interaction effects, contrasts, post-hoc tests Continuous dependent variable, independent samples, covariates: ANOVA (one way, n-ways), ANCOVA TF2 3-5　　　　　BEPW 3　　　EWRP
13.05. 20.05. 03.06.	Continuous dependent variable, dependent samples/repeated measures, covariates: ANOVA (n-ways), ANCOVA; multiple ANOVA TF2 6, 7
10.06.	Some introduction in simulation for analyzing human behavior HHL 15　　　　WG　　　　WRG
24.06.	Exam (Part Prof. Wagner), **Computer Lab 1**

Students must *conduct statistical analyses* (preferably using SPSS) and *interpret the results achieved* on experimental data provided by the instructor. Broadly speaking, empirical data sets will cover four different issues.

Topic	Due date
Experimental data with discrete dependent variables	April 29
Experimental data with metric dependent variables, between-subjects designs	May 13
Experimental data with metric dependent variables, within-subjects and mixed designs	June 10
Assignments for simulating data	June 24

Please, email your written reports (in a Word document) to Ms. Ladenstein (judith.ladenstein@univie.ac.at).